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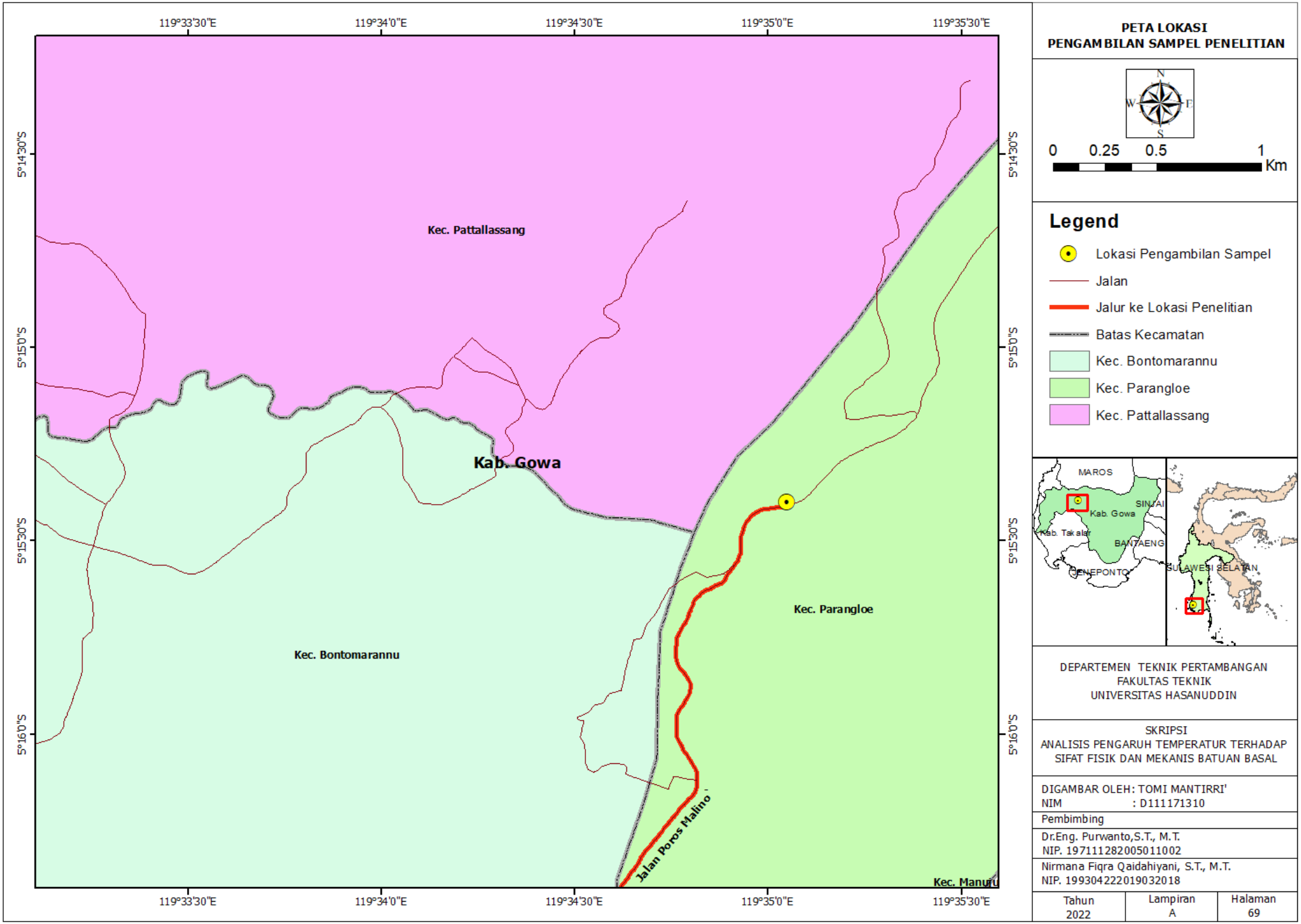
LAMPIRAN

LAMPIRAN A
PETA LOKASI PENGAMBILAN SAMPEL


PETA LOKASI
PENGAMBILAN SAMPEL PENELITIAN
N
W
E
S
0 0.25 0.5 1
Km
Legend
Lokasi Pengambilan Sampel
Jalan
Jalur ke Lokasi Penelitian
Batas Kecamatan
Kec. Bontomarannu
Kec. Parangloe
Kec. Pattallassang
119°33'30"E
119°34'0"E
119°34'30"E
119°35'0"E
119°35'30"E
5°14'30"S
5°15'0"S
5°15'30"S
5°16'0"S
Kec. Pattallassang
Kab. Gowa
Kec. Bontomarannu
Kec. Parangloe
Kec. Manuju
Jalan Poros Malino
MAROS
SINJAI
Kab. Gowa
Kab. Takalar
BANTAENG
JENEPONTO
SULAWESI SELATAN
DEPARTEMEN TEKNIK PERTAMBANGAN
FAKULTAS TEKNIK
UNIVERSITAS HASANUDDIN
SKRIPSI
ANALISIS PENGARUH TEMPERATUR TERHADAP SIFAT FISIK DAN MEKANIS BATUAN BASAL
DIGAMBAR OLEH: TOMI MANTIRRI'
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NIP. 199304222019032018
Tahun 2022
Lampiran A
Halaman 69

LAMPIRAN B

LEMBAR DESKRIPSI MAKROSKOPIS BATUAN

Jenis Batuan : Batuan Beku

Warna

- Warna Segar : Abu-Abu Kehitaman
- Warna Lapuk : Jingga Kehitaman

Tekstur

- Kristalinitas : Holokristalin
- Granularitas : Porfiritik
- Fabrik
    - Bentuk : Subhedral
    - Relasi : Equigranular

Striktur : Masif

Komposisi Mineral :

Fenokris : Piroksin (Hitam)

Massa Dasar : Olivin (Hijau), Plagioklas Feldpar (Putih), kuarsa (putih)

Nama Batuan : Basal

LAMPIRAN C
PERHITUNGAN SIFAT FISIK BATUAN

A. Data Pengujian Sifat Fisik

Data pengujian sifat fisik berupa berat natural (W_n), berat jenuh (W_w), berat gantung (W_S), dan berat kering (W_O). Berikut merupakan urian data uji sifat fisik sampel batuan.

Temperatur	kode	Berat natural (gram)	Berat jenuh (gram)	Berat gantung (gram)	Berat kering (gram)
25	25A	101,5	101,7	66,4	101,4
	25B	111,6	111,8	73,5	111,5
	25C	100,7	100,9	63,4	100,6
100	100A	64,2	64,5	39,9	64,2
	100B	122,6	123,4	75	122,6
	100C	111,5	112,7	66,7	111,5
300	300A	140,5	142,9	82,5	140,5
	300B	203,4	206,5	120,9	203,4
	300C	292,8	296,3	177	292,8
500	500A	123,8	126,1	72	123,8
	500B	245,5	249,4	151	245,5
	500C	154	156,3	90	154
800	800A	119,7	122,6	67,2	119,7
	800B	148,9	152,2	82,5	148,9
	800C	167,8	171,5	91	167,8

B. Densitas/Bobot Isi

Bobot isi sampel batuan uji terbagi atas tiga berdasarkan kondisi batuan, yaitu bobot isi natural (*natural density*), bobot isi kering (*dry density*), dan bobot isi jenuh (*saturated density)*. Berikut perhitungan nilai bobot isi batuan.

1. bobot isi natural (*natural density*)

   Nilai bobot isi natural dihitung menggunakan Persamaan 2.1. Nilai bobot isi natural sampel batuan uji adalah:

   Bobot isi natural sampel 25A =

$$\frac{W_n}{W_w - W_s} = \frac{101{,}5\ g}{101{,}7\ g - 66{,}4\ g} = \frac{105{,}15\ g}{35{,}3\ g} = 2{,}88$$

Bobot isi natural sampel 25B =

$$\frac{W_n}{W_w - W_s} = \frac{111{,}6\ g}{111{,}8\ g - 73{,}5\ g} = \frac{111{,}6\ g}{38{,}3\ g} = 2{,}91$$

Bobot isi natural sampel 25C =

$$\frac{W_n}{W_w - W_s} = \frac{100{,}7\ g}{100{,}9\ g - 63{,}4\ g} = \frac{105{,}15\ g}{34{,}7\ g} = 2{,}69$$

Bobot isi natural sampel 100A =

$$\frac{W_n}{W_w - W_s} = \frac{64{,}2\ g}{64{,}5\ g - 39{,}9\ g} = \frac{105{,}15\ g}{24{,}6\ g} = 2{,}61$$

Bobot isi natural sampel 100B =

$$\frac{W_n}{W_w - W_s} = \frac{122{,}6\ g}{123{,}4\ g - 75\ g} = \frac{111{,}6\ g}{48{,}4\ g} = 2{,}53$$

Bobot isi natural sampel 100C =

$$\frac{W_n}{W_w - W_s} = \frac{111{,}5\ g}{112{,}7\ g - 66{,}7\ g} = \frac{105{,}15\ g}{46\ g} = 2{,}42$$

Bobot isi natural sampel 300A =

$$\frac{W_n}{W_w - W_s} = \frac{140{,}5\ g}{142{,}9\ g - 82{,}5\ g} = \frac{105{,}15\ g}{60{,}4\ g} = 2{,}33$$

Bobot isi natural sampel 300B =

$$\frac{W_n}{W_w - W_s} = \frac{203{,}4\ g}{206{,}5\ g - 120{,}9\ g} = \frac{111{,}6\ g}{85{,}6\ g} = 2{,}38$$

Bobot isi natural sampel 300C =

$$\frac{W_n}{W_w - W_s} = \frac{292{,}8\ g}{296{,}3\ g - 177\ g} = \frac{105{,}15\ g}{119{,}3\ g} = 2{,}45$$

Bobot isi natural sampel 500A =

$$\frac{W_n}{W_w - W_s} = \frac{123{,}8\ g}{126{,}1\ g - 72\ g} = \frac{105{,}15\ g}{54{,}1\ g} = 2{,}29$$

Bobot isi natural sampel 500B =

$$\frac{W_n}{W_w - W_s} = \frac{245{,}5\ g}{249{,}4\ g - 151\ g} = \frac{111{,}6\ g}{98{,}4\ g} = 2{,}49$$

Bobot isi natural sampel 500C =

$$\frac{W_n}{W_w - W_s} = \frac{154\ g}{156{,}3\ g - 90\ g} = \frac{105{,}15\ g}{66{,}3\ g} = 2{,}32$$

Bobot isi natural sampel 800A =

$$\frac{W_n}{W_w - W_s} = \frac{119{,}7\ g}{122{,}6\ g - 67{,}2\ g} = \frac{105{,}15\ g}{55{,}4\ g} = 2{,}16$$

Bobot isi natural sampel 800B =

$$\frac{W_n}{W_w - W_s} = \frac{148{,}9\ g}{152{,}2\ g - 82{,}5\ g} = \frac{111{,}6\ g}{69{,}7\ g} = 2{,}14$$

Bobot isi natural sampel 800C =

$$\frac{W_n}{W_w - W_s} = \frac{167{,}8\ g}{171{,}5\ g - 91\ g} = \frac{105{,}15\ g}{80{,}5\ g} = 2{,}08$$

2. bobot isi jenuh (*saturated density*)

Nilai bobot isi jenuh dihitung menggunakan Persamaan 2.2. Nilai bobot isi jenuh sampel batuan uji adalah:

Bobot isi jenuh sampel 25A =

$$\frac{W_w}{W_w - W_s} = \frac{101{,}7\ g}{101{,}7\ g - 66{,}4\ g} = \frac{105{,}15\ g}{35{,}3\ g} = 2{,}88$$

Bobot isi jenuh sampel 25B =

$$\frac{W_w}{W_w - W_s} = \frac{111{,}8\ g}{111{,}8\ g - 73{,}5\ g} = \frac{105{,}15\ g}{38{,}3\ g} = 2{,}92$$

Bobot isi jenuh sampel 25C =

$$\frac{W_w}{W_w - W_s} = \frac{100{,}9\ g}{100{,}9\ g - 63{,}4\ g} = \frac{101{,}2\ g}{34{,}7\ g} = 2{,}69$$

Bobot isi jenuh sampel 100A =

$$\frac{W_w}{W_w - W_s} = \frac{64{,}5\ g}{64{,}5\ g - 39{,}9\ g} = \frac{64{,}5\ g}{24{,}6\ g} = 2{,}62$$

Bobot isi jenuh sampel 100B =

$$\frac{W_w}{W_w - W_s} = \frac{123{,}4\ g}{123{,}4\ g - 75\ g} = \frac{123{,}4\ g}{48{,}4\ g} = 2{,}55$$

Bobot isi jenuh sampel 100C =

$$\frac{W_w}{W_w - W_s} = \frac{112{,}7\ g}{112{,}7\ g - 66{,}7\ g} = \frac{112{,}7\ g}{46\ g} = 2{,}45$$

Bobot isi jenuh sampel 300A =

$$\frac{W_w}{W_w - W_s} = \frac{142{,}9\ g}{142{,}9\ g - 85{,}2\ g} = \frac{142{,}9\ g}{60{,}4\ g} = 2{,}37$$

Bobot isi jenuh sampel 300B =

$$\frac{W_w}{W_w - W_s} = \frac{206{,}5\ g}{206{,}5\ g - 120{,}9\ g} = \frac{206{,}5\ g}{85{,}5\ g} = 2{,}41$$

Bobot isi jenuh sampel 300C =

$$\frac{W_w}{W_w - W_s} = \frac{296{,}3\ g}{296{,}3\ g - 177\ g} = \frac{296{,}3\ g}{119{,}3\ g} = 2{,}48$$

Bobot isi jenuh sampel 500A =

$$\frac{W_w}{W_w - W_s} = \frac{126{,}1\ g}{126{,}1\ g - 72\ g} = \frac{126{,}1\ g}{54{,}1\ g} = 2{,}33$$

Bobot isi jenuh sampel 500B =

$$\frac{W_w}{W_w - W_s} = \frac{249{,}4\ g}{149{,}4\ g - 151\ g} = \frac{249{,}4\ g}{98{,}4g} = 2{,}53$$

Bobot isi jenuh sampel 500C =

$$\frac{W_w}{W_w - W_s} = \frac{156{,}3\ g}{156{,}3\ g - 90\ g} = \frac{156{,}3\ g}{66{,}3\ g} = 2{,}36$$

Bobot isi jenuh sampel 800A =

$$\frac{W_w}{W_w - W_s} = \frac{122{,}6\ g}{122{,}6\ g - 67{,}2\ g} = \frac{122{,}6\ g}{55{,}4\ g} = 2{,}21$$

Bobot isi jenuh sampel 800B =

$$\frac{W_w}{W_w - W_s} = \frac{152{,}2\ g}{152{,}2\ g - 82{,}5\ g} = \frac{152{,}2\ g}{69{,}7\ g} = 2{,}18$$

Bobot isi jenuh sampel 800C =

$$\frac{W_w}{W_w - W_s} = \frac{171{,}5g}{171{,}5\ g - 66{,}4\ g} = \frac{171{,}5\ g}{80{,}5\ g} = 2{,}13$$

3. bobot isi kering (*dry density*)

Nilai bobot isi jenuh dihitung menggunakan Persamaan 2.3. Nilai bobot isi jenuh sampel batuan uji adalah:

Bobot isi kering sampel 25A =

$$\frac{W_o}{W_w - W_s} = \frac{101{,}4\ g}{101{,}7\ g - 66{,}4\ g} = \frac{101{,}4g}{35{,}3\ g} = 2{,}87$$

Bobot isi kering sampel 25B =

$$\frac{W_o}{W_w - W_s} = \frac{111{,}5\ g}{111{,}8\ g - 73{,}5\ g} = \frac{111{,}5\ g}{38{,}3\ g} = 2{,}91$$

Bobot isi kering sampel 25C =

$$\frac{W_o}{W_w - W_s} = \frac{101{,}7\ g}{100{,}9\ g - 63{,}4\ g} = \frac{101{,}6\ g}{37.5} = 2{,}69$$

Bobot isi kering sampel 100A =

$$\frac{W_o}{W_w - W_s} = \frac{64{,}2\ g}{64{,}5\ g - 39{,}9\ g} = \frac{105{,}15\ g}{24{,}6\ g} = 2{,}61$$

Bobot isi kering sampel 100B =

$$\frac{W_o}{W_w - W_s} = \frac{122{,}6\ g}{123{,}4\ g - 75\ g} = \frac{111{,}6\ g}{48{,}4\ g} = 2{,}53$$

Bobot isi kering sampel 100C =

$$\frac{W_o}{W_w - W_s} = \frac{111{,}5\ g}{112{,}7\ g - 66{,}7\ g} = \frac{105{,}15\ g}{46\ g} = 2{,}42$$

Bobot isi kering sampel 300A =

$$\frac{W_o}{W_w - W_s} = \frac{140{,}5\ g}{142{,}9\ g - 82{,}5\ g} = \frac{105{,}15\ g}{60{,}4\ g} = 2{,}33$$

Bobot isi kering sampel 300B =

$$\frac{W_o}{W_w - W_s} = \frac{203{,}4\ g}{206{,}5\ g - 120{,}9\ g} = \frac{111{,}6\ g}{85{,}6\ g} = 2{,}38$$

Bobot isi kering sampel 300C =

$$\frac{W_o}{W_w - W_s} = \frac{292{,}8\ g}{296{,}3\ g - 177\ g} = \frac{105{,}15\ g}{119{,}3\ g} = 2{,}45$$

Bobot isi kering sampel 500A =

$$\frac{W_o}{W_w - W_s} = \frac{123{,}8\ g}{126{,}1\ g - 72\ g} = \frac{105{,}15\ g}{54{,}1\ g} = 2{,}29$$

Bobot isi kering sampel 500B =

$$\frac{W_o}{W_w - W_s} = \frac{245{,}5\ g}{249{,}4\ g - 151\ g} = \frac{111{,}6\ g}{98{,}4\ g} = 2{,}49$$

Bobot isi kering sampel 500C =

$$\frac{W_o}{W_w - W_s} = \frac{154\ g}{156{,}3\ g - 90\ g} = \frac{105{,}15\ g}{66{,}3\ g} = 2{,}32$$

Bobot isi kering sampel 800A =

$$\frac{W_o}{W_w - W_s} = \frac{119{,}7\ g}{122{,}6\ g - 67{,}2\ g} = \frac{105{,}15\ g}{55{,}4\ g} = 2{,}16$$

Bobot isi kering sampel 800B =

$$\frac{W_o}{W_w - W_s} = \frac{148{,}9\ g}{152{,}2\ g - 82{,}5\ g} = \frac{111{,}6\ g}{69{,}7\ g} = 2{,}14$$

Bobot isi kering sampel 800C =

$$\frac{W_o}{W_w - W_s} = \frac{167{,}8\ g}{171{,}5\ g - 91\ g} = \frac{105{,}15\ g}{80{,}5\ g} = 2{,}08$$

C. Derajat Kejenuhan

Perhitungan nilai derajat kejenuhan sampel batuan uji meggunakan persamaan 2.8 diuraikan sebagai berikut.

Derajat kejenuhan 25A =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{101{,}5\ g - 101{,}4\ g}{101{,}7\ g - 101{,}4\ g}\right) X\ 100\% = 33{,}33\%$$

Derajat kejenuhan 25B =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{111{,}6\ g - 111{,}5\ g}{111{,}8\ g - 111{,}5\ g}\right) X\ 100\% = 33{,}33\%$$

Derajat kejenuhan 25A =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{100{,}7\ g - 100{,}6\ g}{100{,}9\ g - 100{,}6\ g}\right) X\ 100\% = 33.33\%$$

Derajat kejenuhan 100A =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{64{,}2\ g - 64{,}2\ g}{64{,}5\ g - 64{,}2\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 100B =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{122{,}6\ g - 122{,}6\ g}{123{,}4\ g - 122{,}6\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 100C =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{115{,}5\ g - 115{,}5\ g}{112{,}7\ g - 115{,}5\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 300A =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{140{,}5\ g - 140{,}5\ g}{142{,}9\ g - 140{,}5\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 300B =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{203{,}3\ g - 203{,}4\ g}{205{,}5\ g - 203{,}4\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 300C =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{292{,}8\ g - 292{,}8\ g}{296{,}3\ g - 292{,}8\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 500A =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{123{,}8\ g - 123{,}8\ g}{126{,}1\ g - 123{,}8\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 500B =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{245{,}5\ g - 245{,}5\ g}{249{,}4\ g - 245{,}2g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 500C =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{154\ g - 154\ g}{156{,}3\ g - 154\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 800A =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{119{,}7\ g - 119{,}7\ g}{122{,}6\ g - 119{,}7\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 800B =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{148{,}9\ g - 148{,}9\ g}{152{,}2\ g - 148{,}9\ g}\right) X\ 100\% = 0\%$$

Derajat kejenuhan 800C =

$$\left(\frac{W_n - W_o}{W_w - W_O}\right) X\ 100\% = \left(\frac{167{,}8\ g - 167{,}8\ g}{171{,}5\ g - 167{,}8\ g}\right) X\ 100\% = 0\%$$

D. Porositas (n)

Perhitungan nilai porositas sampel batuan uji menggunakan persamaan 2.9 diuraikan sebagai berikut.

Porositas 25A =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{101{,}7\ g - 101{,}4\ g}{101{,}7\ g - 101{,}4\ g}\right) X\ 100\% = 0{,}85\%$$

Porositas 25B =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{111{,}8\ g - 111{,}5\ g}{111{,}8\ g - 73{,}5\ g}\right) X\ 100\% = 0{,}78\%$$

Porositas 25C =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{100{,}9\ g - 100{,}6\ g}{100{,}9\ g - 63{,}4\ g}\right) X\ 100\% = 0{,}80\%$$

Porositas 100A =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{64{,}5\ g - 64{,}2\ g}{64{,}5\ g - 39{,}9\ g}\right) X\ 100\% = 1{,}22\%$$

Porositas 100B =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{123{,}4\ g - 122{,}6\ g}{123{,}4\ g - 75\ g}\right) X\ 100\% = 1{,}65\%$$

Porositas 100C =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{112{,}7\ g - 111{,}5\ g}{112{,}7\ g - 66{,}7\ g}\right) X\ 100\% = 2{,}61\%$$

Porositas 300A =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{142{,}9\ g - 140{,}5\ g}{142{,}9\ g - 82{,}6\ g}\right) X\ 100\% = 3{,}97\%$$

Porositas 300B =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{206{,}5\ g - 203{,}4\ g}{206{,}5\ g - 120{,}9\ g}\right) X\ 100\% = 3{,}62\%$$

Porositas 300C =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{296{,}3\ g - 292{,}8\ g}{296{,}3\ g - 177\ g}\right) X\ 100\% = 2{,}93\%$$

Porositas 500A =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{126{,}1\ g - 123{,}8\ g}{126{,}1\ g - 72\ g}\right) X\ 100\% = 4{,}25\%$$

Porositas 500B =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{249{,}4\ g - 245{,}5\ g}{249{,}4\ g - 151\ g}\right) X\ 100\% = 3{,}96\%$$

Porositas 500C =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{156{,}3\ g - 154\ g}{165{,}3\ g - 90\ g}\right) X\ 100\% = 3{,}47\%$$

Porositas 800A =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{122{,}6\ g - 119{,}7\ g}{122{,}6\ g - 67{,}2\ g}\right) X\ 100\% = 5{,}23\%$$

Porositas 800B =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{152{,}2\ g - 148{,}9\ g}{152{,}2\ g - 82{,}5\ g}\right) X\ 100\% = 4{,}73\%$$

Porositas 800C =

$$\left(\frac{W_w - W_o}{W_w - W_s}\right) X\ 100\% = \left(\frac{171{,}5\ g - 167{,}8\ g}{171{,}5\ g - 91\ g}\right) X\ 100\% = 4{,}60\%$$

E. Nisbah Rongga (e)

Perhitungan nilai nisbah rongga sampel batuan uji menggunakan persamaan 2.10 diuraikan sebagai berikut.

Nisbah rongga 25A

$$\frac{n}{1-n} = \frac{0{,}85\%}{(1-0{,}85\%)} = 0{,}01$$

Nisbah rongga 25B

$$\frac{n}{1-n} = \frac{0{,}78\%}{(1-0{,}78\%)} = 0{,}01$$

Nisbah rongga 25C

$$\frac{n}{1-n} = \frac{0{,}80\%}{(1-0{,}80\%)} = 0{,}01$$

Nisbah rongga 100A

$$\frac{n}{1-n} = \frac{1{,}22\%}{(1-1{,}22\%)} = 0{,}01$$

Nisbah rongga 100B

$$\frac{n}{1-n} = \frac{1{,}65\%}{(1-1{,}65\%)} = 0{,}02$$

Nisbah rongga 100C

$$\frac{n}{1-n} = \frac{2{,}61\%}{(1-2{,}61\%)} = 0{,}03$$

Nisbah rongga 300A

$$\frac{n}{1-n} = \frac{3{,}97\%}{(1-3{,}97\%)} = 0{,}04$$

Nisbah rongga 300B

$$\frac{n}{1-n} = \frac{3{,}62\%}{(1-3{,}62\%)} = 0{,}04$$

Nisbah rongga 300C

$$\frac{n}{1-n} = \frac{2{,}93\%}{(1-2{,}93\%)} = 0{,}03$$

Nisbah rongga 500A

$$\frac{n}{1-n} = \frac{4{,}25\%}{(1-4{,}25\%)} = 0{,}04$$

Nisbah rongga 500B

$$\frac{n}{1-n} = \frac{3{,}96\%}{(1-3{,}96\%)} = 0{,}04$$

Nisbah rongga 500C

$$\frac{n}{1-n} = \frac{3{,}47\%}{(1-3{,}47\%)} = 0{,}04$$

Nisbah rongga 800A

$$\frac{n}{1-n} = \frac{5{,}23\%}{(1-5{,}23\%)} = 0{,}06$$

Nisbah rongga 800B

$$\frac{n}{1-n} = \frac{4{,}73\%}{(1-4{,}73\%)} = 0{,}05$$

Nisbah rongga 800C

$$\frac{n}{1-n} = \frac{4{,}60\%}{(1-4{,}60\%)} = 0{,}05$$

F. Hasil Perhitungan Nilai Sifat Fisik Batuan

Temperatur	kode	W_n	W_w	W_s	W_o	ρn (gr/cm3)	ρs (gr/cm3)	ρd (gr/cm3)	w_n	w_s	S (%)	n (%)	e
25	25A	101,5	101,7	66,4	101,4	2,88	2,88	2,87	0,099	0,296	33,333	0,850	0,009
	25B	111,6	111,8	73,5	111,5	2,91	2,92	2,91	0,090	0,269	33,333	0,783	0,008
	25C	100,7	100,9	63,4	100,6	2,69	2,69	2,68	0,099	0,298	33,333	0,800	0,008
100	100A	64,2	64,5	39,9	64,2	2,61	2,62	2,61	0,000	0,467	0,000	1,220	0,012
	100B	122,6	123,4	75	122,6	2,53	2,55	2,53	0,000	0,653	0,000	1,653	0,017
	100C	111,5	112,7	66,7	111,5	2,42	2,45	2,42	0,000	1,076	0,000	2,609	0,027
300	300A	140,5	142,9	82,5	140,5	2,33	2,37	2,33	0,000	1,708	0,000	3,974	0,041
	300B	203,4	206,5	121	203,4	2,38	2,41	2,38	0,000	1,524	0,000	3,621	0,038
	300C	292,8	296,3	177	292,8	2,45	2,48	2,45	0,000	1,195	0,000	2,934	0,030
500	500A	123,8	126,1	72	123,8	2,29	2,33	2,29	0,000	1,858	0,000	4,251	0,044
	500B	245,5	249,4	151	245,5	2,49	2,53	2,49	0,000	1,589	0,000	3,963	0,041
	500C	154	156,3	90	154	2,32	2,36	2,32	0,000	1,494	0,000	3,469	0,036
800	800A	119,7	122,6	67,2	119,7	2,16	2,21	2,16	0,000	2,423	0,000	5,235	0,055
	800B	148,9	152,2	82,5	148,9	2,14	2,18	2,14	0,000	2,216	0,000	4,735	0,050
	800C	167,8	171,5	91	167,8	2,08	2,13	2,08	0,000	2,205	0,000	4,596	0,048

Keteranga

Wn = Berat normal (gram)

Ww = Berat jenuh(gram)

Ws = Berat gantung (gram)

Wo = Berat kering (gram)

ρn = Bobot isi natural (gram/cm^3)

ρn = Bobot isi natural (gram/cm^3)

wn = Kadar air asli (%)

ws = Kadar air jenuh (%)

n = Porositas (%)

e = Nisbah rongga

LAMPIRAN D
DATA PENGUJIAN KUAT TEKAN UNIAKSIAL

A. Hasil Pengukuran Tinggi dan Diameter Sampel Batuan Uji

No.	Kode	Litologi	Tinggi (mm)				Diameter (mm)				L/D	Luas penampang
			1	2	3	Rata-rata	1	2	3	Rata-rata		(mm^2)
1	25A	Basal	93,33	93,42	93,19	93,31	42,76	42,71	42,83	42,77	2,18	1437,06
2	25B	Basal	87,11	86,97	87,05	87,04	41,84	42,55	42,57	42,32	2,06	1407,20
3	25C	Basal	87,78	87,91	87,92	87,87	42,87	42,91	42,83	42,87	2,05	1444,01
4	100A	Basal	87,5	87,58	87,98	87,69	42,91	42,84	42,98	42,91	2,04	1446,71
5	100B	Basal	87,83	87,77	87,47	87,69	42,82	42,8	42,84	42,82	2,05	1440,65
6	100C	Basal	87,57	87,38	87,29	87,41	42,83	43,06	41,91	42,60	2,05	1425,88
7	300A	Basal	86,84	86,92	86,63	86,80	42,84	42,76	42,83	42,81	2,03	1439,98
8	300B	Basal	88,81	88	87,29	88,03	42,92	42,82	42,76	42,83	2,06	1441,55
9	300C	Basal	87,97	88,08	87,97	88,01	42,94	42,76	42,76	42,82	2,06	1440,65
10	500A	Basal	87,56	87,97	87,82	87,78	42,8	42,76	42,9	42,82	2,05	1440,65
11	500B	Basal	87,56	87,06	86,95	87,19	42,85	42,76	42,82	42,81	2,04	1439,98
12	500C	Basal	88,87	87,65	87,42	87,98	42,94	43,03	42,8	42,92	2,05	1447,61
13	800A	Basal	86,07	85,52	85,83	85,81	42,77	42,91	42,84	42,84	2,00	1441,99
14	800B	Basal	87,17	88,08	88,38	87,88	42,95	42,88	43,22	43,02	2,04	1453,91
15	800C	Basal	86,09	85,88	85,79	85,92	42,96	43,06	42,99	43,00	2,00	1453,01

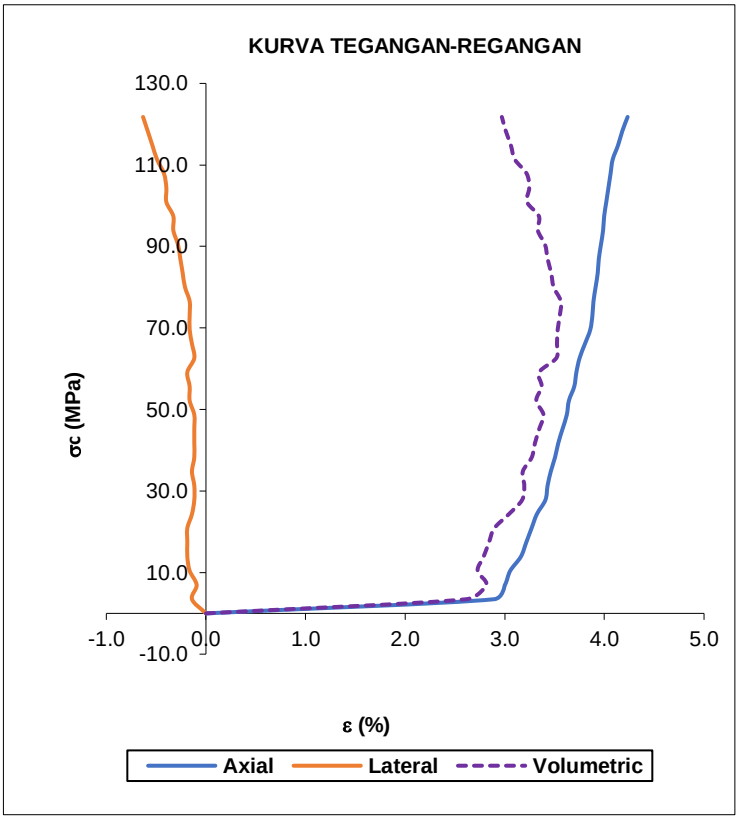
B. Hasil Pengujian Kuat Tekan Sampel 25A

1. Hasil deformasi batuan sampel 25A

F (kN)	Aksial	Lateral 1	Lateral 2	σ_c (MPa)	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0,00	0,00	0,00	0,00
5	270	-98	104	3,48	-0,16	2,89	2,57
10	280	-100	104	6,96	-0,14	3,00	2,72
15	285	-100	107	10,44	-0,16	3,05	2,73
20	295	-101	109	13,92	-0,19	3,16	2,79
25	300	-102	110	17,40	-0,19	3,21	2,84
30	305	-103	111	20,88	-0,19	3,27	2,89
35	310	-105	111	24,36	-0,14	3,32	3,04
40	318	-106	111	27,83	-0,12	3,41	3,17
45	320	-106	111	31,31	-0,12	3,43	3,20
50	323	-106	112	34,79	-0,14	3,46	3,18
55	327	-107	112	38,27	-0,12	3,50	3,27
60	330	-107	112	41,75	-0,12	3,54	3,30
65	334	-107	112	45,23	-0,12	3,58	3,35
70	338	-107	112	48,71	-0,12	3,62	3,39
75	340	-108	115	52,19	-0,16	3,64	3,32
80	345	-108	115	55,67	-0,16	3,70	3,37
85	347	-108	116	59,15	-0,19	3,72	3,34
90	350	-111	116	62,63	-0,12	3,75	3,52
95	355	-111	117	66,11	-0,14	3,80	3,52
100	360	-111	118	69,59	-0,16	3,86	3,53
105	362	-111	118	73,07	-0,16	3,88	3,55
110	363	-112	119	76,55	-0,16	3,89	3,56
115	365	-112	121	80,02	-0,21	3,91	3,49
120	367	-112	122	83,50	-0,23	3,93	3,47
125	368	-112	123	86,98	-0,26	3,94	3,43
130	370	-111	123	90,46	-0,28	3,97	3,40
135	372	-110	124	93,94	-0,33	3,99	3,33
140	373	-110	124	97,42	-0,33	4,00	3,34

F (kN)	Aksial	Lateral 1	Lateral 2	σ_c (MPa)	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
145	375	-108	125	100,90	-0,40	4,02	3,22
150	377	-108	125	104,38	-0,40	4,04	3,25
155	379	-108	126	107,86	-0,42	4,06	3,22
160	381	-107	128	111,34	-0,49	4,08	3,10
165	386	-105	128	114,82	-0,54	4,14	3,06
170	390	-105	130	118,30	-0,58	4,18	3,01
175	395	-104	131	121,78	-0,63	4,23	2,97

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 25A



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

a. Kuat tekan uniaksial (σ_c) = 121,78 MPa

b. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{69{,}59-31{,}31}{3{,}865\%-3{,}34\%} = \frac{66{,}11\ MPa}{00{,}0088} = 7522{,}7 \text{ MPa}$$

c. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-0{,}16\%) - (-0{,}09\%)}{3{,}87\% - 3{,}00\%}\right) = 0{,}079$$

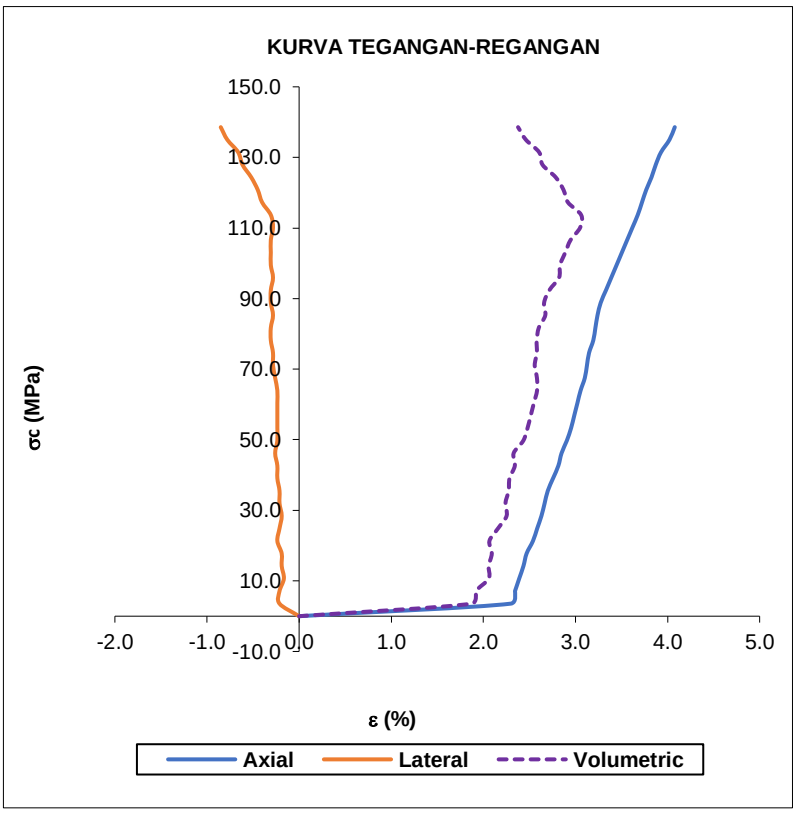
C. Hasil Pengujian Kuat Tekan Sampel 25B

1. Hasil deformasi batuan sampel 25A

F (kN)	Aksial	Lateral 1	Lateral 2	σ_c (MPa)	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0,00	0,00	0,00	0,00
5	200	-10	19	3,55	-0,21	2,30	1,87
10	204	-9	18	7,11	-0,21	2,34	1,92
15	208	-8	15	10,66	-0,17	2,39	2,06
20	212	-6	14	14,21	-0,19	2,44	2,06
25	215	-5	13	17,77	-0,19	2,47	2,09
30	221	-3	13	21,32	-0,24	2,54	2,07
35	225	-2	11	24,87	-0,21	2,58	2,16
40	229	-3	11	28,43	-0,19	2,63	2,25
45	232	-2	11	31,98	-0,21	2,67	2,24
50	235	-2	11	35,53	-0,21	2,70	2,27
55	240	-2	12	39,08	-0,24	2,76	2,28
60	245	-2	12	42,64	-0,24	2,81	2,34
65	248	-1	12	46,19	-0,26	2,85	2,33
70	253	0	10	49,74	-0,24	2,91	2,43
75	257	0	10	53,30	-0,24	2,95	2,48
80	260	0	10	56,85	-0,24	2,99	2,51
85	263	0	10	60,40	-0,24	3,02	2,55
90	266	1	9	63,96	-0,24	3,06	2,58
95	270	2	9	67,51	-0,26	3,10	2,58
100	272	3	9	71,06	-0,28	3,12	2,56
105	274	3	9	74,62	-0,28	3,15	2,58
110	278	5	8	78,17	-0,31	3,19	2,58
115	280	5	8	81,72	-0,31	3,22	2,60
120	282	5	7	85,28	-0,28	3,24	2,67
125	285	6	7	88,83	-0,31	3,27	2,66

F (kN)	Aksial	Lateral 1	Lateral 2	σ_c (MPa)	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
130	290	6	7	92,38	-0,31	3,33	2,72
135	295	6	6	95,94	-0,28	3,39	2,82
140	300	7	6	99,49	-0,31	3,45	2,83
145	305	7	6	103,04	-0,31	3,50	2,89
150	310	7	6	106,59	-0,31	3,56	2,95
155	315	7	5	110,15	-0,28	3,62	3,05
160	320	8	5	113,70	-0,31	3,68	3,06
165	324	9	8	117,25	-0,40	3,72	2,92
170	328	9	10	120,81	-0,45	3,77	2,87
175	333	11	11	124,36	-0,52	3,83	2,79
180	337	13	13	127,91	-0,61	3,87	2,64
185	342	14	14	131,47	-0,66	3,93	2,61
190	350	16	17	135,02	-0,78	4,02	2,46
195	355	17	19	138,57	-0,85	4,08	2,38

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 25B



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

d. Kuat tekan uniaksial (σ_c) = 138,57 MPa

e. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{78{,}16-7{,}10}{3{,}19-2{,}34\%} = \frac{71{,}06MPa}{00{,}0085} = 8358{,}87 \text{ MPa}$$

f. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-0{,}30\%) - (-0{,}21\%)}{3{,}19\% - 2{,}34\%}\right) = 0{,}11$$

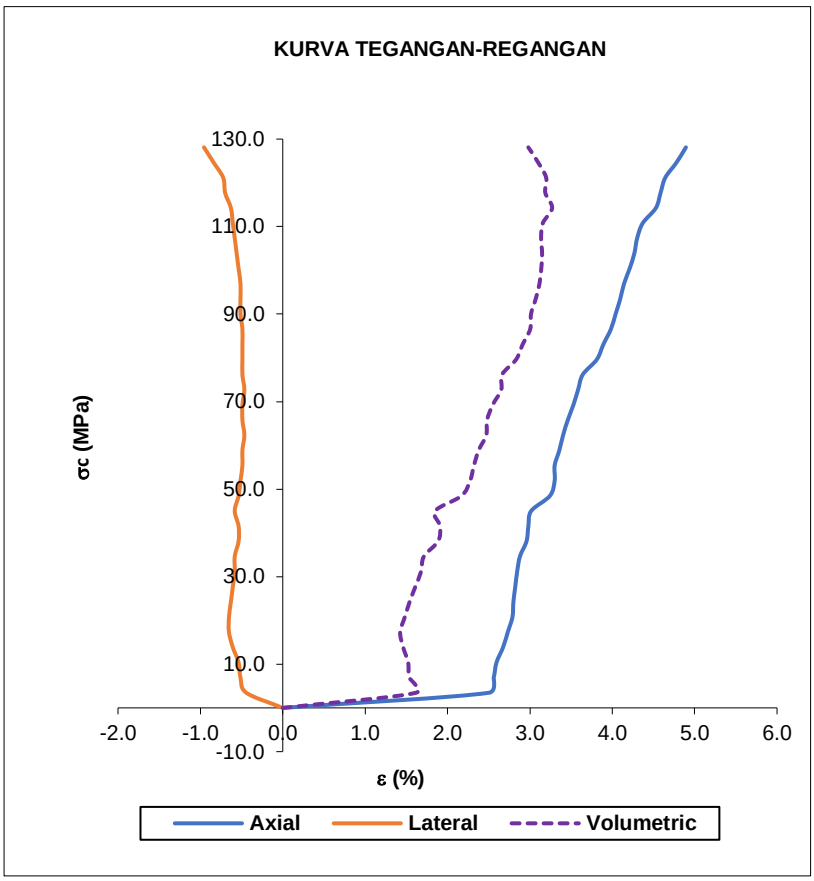
D. Hasil Pengujian Kuat Tekan Sampel 25C

1. Hasil deformasi batuan sampel 25C

F (kN)	Aksial	Lateral 1	Lateral 2	Σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	220	146	-127	3,46	-0,44	2,50	1,62
10	225	149	-127	6,93	-0,51	2,56	1,53
15	228	150	-127	10,39	-0,54	2,59	1,52
20	235	155	-129	13,85	-0,61	2,67	1,46
25	240	158	-130	17,31	-0,65	2,73	1,43
30	245	159	-131	20,78	-0,65	2,79	1,48
35	246	160	-133	24,24	-0,63	2,80	1,54
40	248	160	-134	27,70	-0,61	2,82	1,61
45	250	160	-135	31,16	-0,58	2,85	1,68
50	253	161	-136	34,63	-0,58	2,88	1,71
55	260	161	-138	38,09	-0,54	2,96	1,89
60	262	161	-138	41,55	-0,54	2,98	1,91
65	265	163	-138	45,01	-0,58	3,02	1,85
70	285	162	-139	48,48	-0,54	3,24	2,17
75	290	162	-140	51,94	-0,51	3,30	2,27
80	290	161	-140	55,40	-0,49	3,30	2,32
85	295	161	-140	58,86	-0,49	3,36	2,38
90	299	161	-141	62,33	-0,47	3,40	2,47
95	304	162	-141	65,79	-0,49	3,46	2,48

F (kN)	Aksial	Lateral 1	Lateral 2	Σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
100	310	162	-141	69,25	-0,49	3,53	2,55
105	315	162	-142	72,71	-0,47	3,58	2,65
110	320	163	-142	76,18	-0,49	3,64	2,66
115	335	163	-142	79,64	-0,49	3,81	2,83
120	342	164	-143	83,10	-0,49	3,89	2,91
125	350	164	-143	86,56	-0,49	3,98	3,00
130	355	165	-143	90,03	-0,51	4,04	3,01
135	360	165	-143	93,49	-0,51	4,10	3,07
140	364	166	-144	96,95	-0,51	4,14	3,12
145	370	167	-144	100,41	-0,54	4,21	3,14
150	375	168	-144	103,88	-0,56	4,27	3,15
155	378	168	-143	107,34	-0,58	4,30	3,14
160	384	169	-143	110,80	-0,61	4,37	3,16
165	398	169	-142	114,26	-0,63	4,53	3,27
170	403	170	-140	117,73	-0,70	4,59	3,19
175	408	170	-139	121,19	-0,72	4,64	3,20
180	420	171	-135	124,65	-0,84	4,78	3,10
185	430	171	-130	128,12	-0,96	4,89	2,98

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 25C



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

a. Kuat tekan uniaksial (σ_c) = 128,12 MPa

b. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{45{,}01-3{,}46}{3{,}01-2{,}50\%} = \frac{41{,}55\ MPa}{0{,}0051} = 8113{,}50 \text{ MPa}$$

c. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-0{,}58\%) - (-0{,}44\%)}{3{,}01\% - 2{,}50\%}\right) = 0{,}27$$

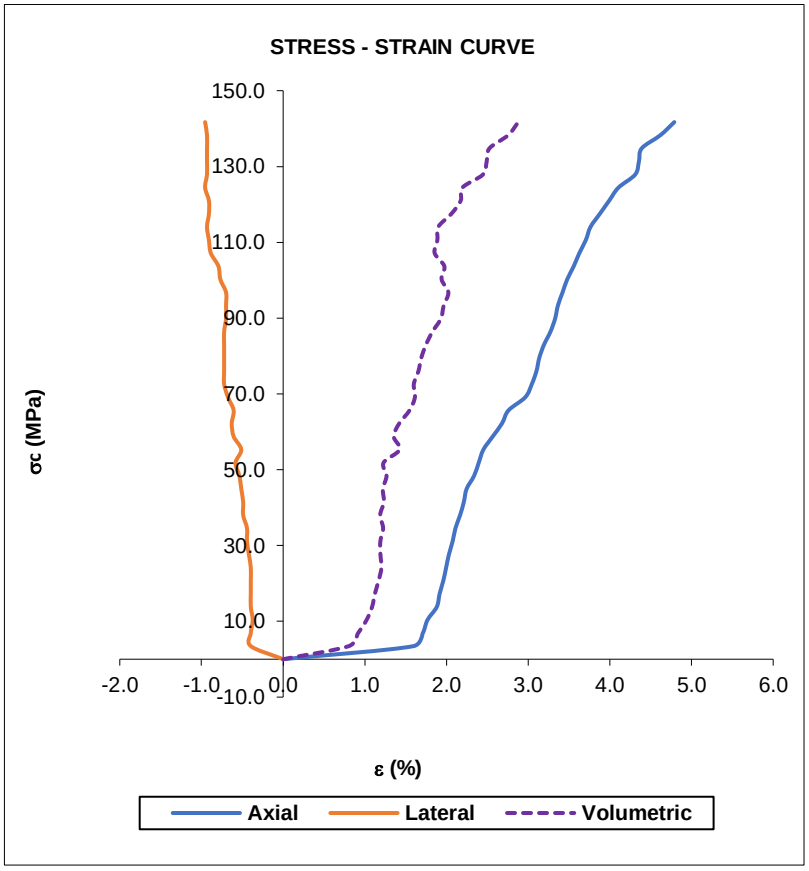
E. Hasil Pengujian Kuat Tekan Sampel 100A

1. Hasil deformasi batuan sampel 100A

F (kN)	Aksial	Lateral 1	Lateral 2	σ_c	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0,00	0,00	0,00	0,00
5	140	-53	70	3,46	-0,40	1,60	0,80
10	150	-53	70	6,91	-0,40	1,71	0,92
15	155	-54	70	10,37	-0,37	1,77	1,02
20	165	-55	72	13,82	-0,40	1,88	1,09
25	168	-52	69	17,28	-0,40	1,92	1,12
30	172	-52	69	20,74	-0,40	1,96	1,17
35	175	-52	69	24,19	-0,40	2,00	1,20
40	178	-51	69	27,65	-0,42	2,03	1,19
45	182	-51	70	31,11	-0,44	2,08	1,19
50	185	-51	70	34,56	-0,44	2,11	1,22
55	190	-50	71	38,02	-0,49	2,17	1,19
60	194	-50	71	41,47	-0,49	2,21	1,23p
65	197	-50	72	44,93	-0,51	2,25	1,22
70	205	-49	72	48,39	-0,54	2,34	1,27
75	210	-49	74	51,84	-0,58	2,39	1,23
80	215	-52	74	55,30	-0,51	2,45	1,43
85	225	-52	78	58,75	-0,61	2,57	1,35
90	235	-56	83	62,21	-0,63	2,68	1,42
95	242	-59	85	65,67	-0,61	2,76	1,55
100	260	-61	90	69,12	-0,68	2,97	1,61
105	267	-62	93	72,58	-0,72	3,04	1,60
110	272	-62	93	76,03	-0,72	3,10	1,66
115	275	-62	93	79,49	-0,72	3,14	1,69
120	280	-63	94	82,95	-0,72	3,19	1,75
125	287	-63	94	86,40	-0,72	3,27	1,83
130	292	-65	95	89,86	-0,70	3,33	1,93
135	295	-65	95	93,32	-0,70	3,36	1,97
140	300	-65	95	96,77	-0,70	3,42	2,02

F (kN)	Aksial	Lateral 1	Lateral 2	σ_c	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
145	305	-63	96	100,23	-0,77	3,48	1,94
150	312	-63	97	103,68	-0,79	3,56	1,97
155	318	-61	99	107,14	-0,89	3,63	1,86
160	325	-61	100	110,60	-0,91	3,71	1,89
165	330	-62	102	114,05	-0,93	3,76	1,90
170	340	-63	102	117,51	-0,91	3,88	2,06
175	350	-64	103	120,96	-0,91	3,99	2,17
180	360	-64	105	124,42	-0,96	4,11	2,19
185	378	-67	107	127,88	-0,93	4,31	2,45
190	382	-69	109	131,33	-0,93	4,36	2,49
195	385	-70	110	134,79	-0,93	4,39	2,53
200	405	-71	111	138,24	-0,93	4,62	2,75
205	420	-71	112	141,70	-0,96	4,79	2,88

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 100A



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

a. Kuat tekan uniaksial (σ_c) = 141,70 MPa

b. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{55{,}29-13{,}82}{2{,}45\%-1{,}88\%} = \frac{41{,}47\ MPa}{0{,}0057} = 7373{,}27 \text{ MPa}$$

c. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-0{,}51\%)-(-0{,}39\%)}{2{,}45\%-1{,}88\%}\right) = 0{,}20$$

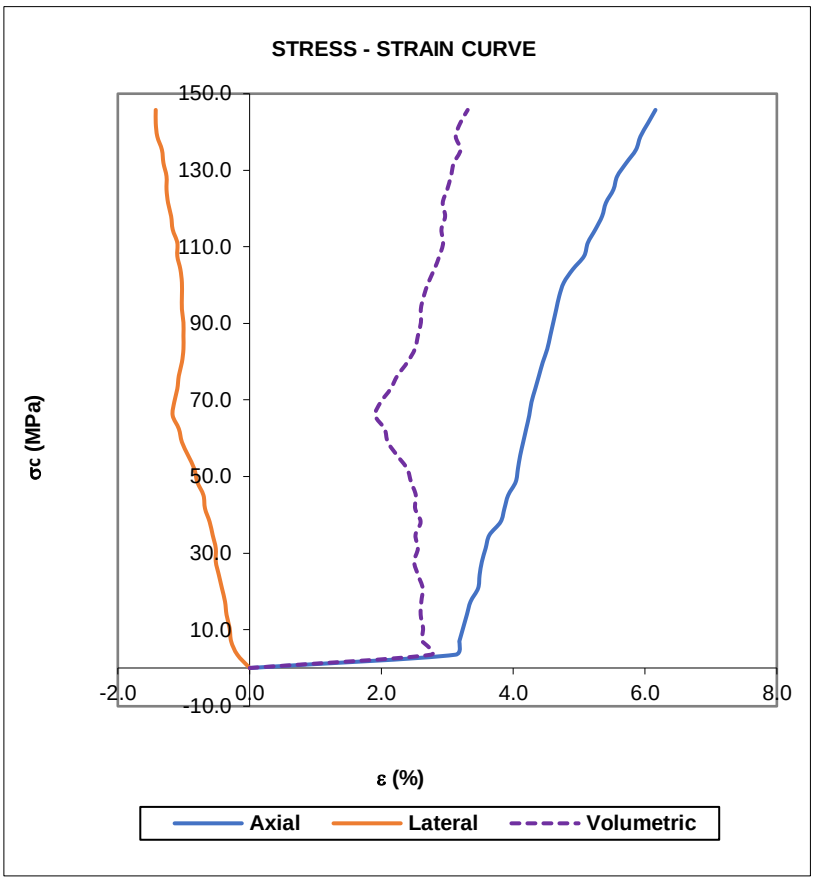
F. Hasil Pengujian Kuat Tekan Sampel 100B

1. Hasil deformasi batuan sampel 100B

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	274	-44	52,00	3,47	-0,19	3,12	2,75
10	279	-41	53,00	6,94	-0,28	3,18	2,62
15	284	-40	53,00	10,41	-0,30	3,24	2,63
20	289	-39	54,00	13,88	-0,35	3,30	2,60
25	294	-38	54,00	17,35	-0,37	3,35	2,61
30	304	-38	56,00	20,82	-0,42	3,47	2,63
35	306	-36	56,00	24,29	-0,47	3,49	2,56
40	309	-35	57,00	27,77	-0,51	3,52	2,50
45	314	-35	57,00	31,24	-0,51	3,58	2,55
50	319	-33	57,00	34,71	-0,56	3,64	2,52
55	334	-33	59,00	38,18	-0,61	3,81	2,59
60	339	-31	60,00	41,65	-0,68	3,87	2,51
65	344	-31	61,00	45,12	-0,70	3,92	2,52
70	354	-30	64,00	48,59	-0,79	4,04	2,45
75	357	-30	66,00	52,06	-0,84	4,07	2,39
80	360	-28	68,00	55,53	-0,93	4,11	2,24
85	364	-26	70,00	59,00	-1,03	4,15	2,10
90	368	-26	72,00	62,47	-1,07	4,20	2,05
95	372	-24	74,00	65,94	-1,17	4,24	1,91

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
100	375	-24	73,00	69,41	-1,14	4,28	1,99
105	380	-25	72,00	72,88	-1,10	4,33	2,14
110	385	-26	72,00	76,35	-1,07	4,39	2,24
115	390	-26	70,00	79,83	-1,03	4,45	2,39
120	396	-27	70,00	83,30	-1,00	4,52	2,51
125	400	-27	70,00	86,77	-1,00	4,56	2,55
130	404	-27	70,00	90,24	-1,00	4,61	2,60
135	408	-26	70,00	93,71	-1,03	4,65	2,60
140	412	-26	70,00	97,18	-1,03	4,70	2,64
145	418	-25	69,00	100,65	-1,03	4,77	2,71
150	430	-25	70,00	104,12	-1,05	4,90	2,80
155	445	-25	72,00	107,59	-1,10	5,07	2,88
160	450	-25	72,00	111,06	-1,10	5,13	2,94
165	460	-24	74,00	114,53	-1,17	5,25	2,91
170	469	-24	75,00	118,00	-1,19	5,35	2,97
175	474	-22	75,00	121,47	-1,24	5,41	2,93
180	484	-22	76,00	124,94	-1,26	5,52	3,00
185	489	-22	76,00	128,41	-1,26	5,58	3,05
190	501	-21	77,00	131,89	-1,31	5,71	3,10
195	514	-21	78,00	135,36	-1,33	5,86	3,20
200	520	-19	79,00	138,83	-1,40	5,93	3,13
205	530	-19	80,00	142,30	-1,42	6,04	3,19
210	540	-19	80,00	145,77	-1,42	6,16	3,31

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 100B



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

a. Kuat tekan uniaksial (σ_c) = 145,77 MPa

b. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{100{,}64-48{,}58}{4{,}77\%-4{,}03\%} = \frac{52{,}06MPa}{0{,}0072} = 7133{,}02 \text{ ,MPa}$$

c. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-1{,}02\%)-(-0{,}79\%)}{4{,}77\%-4{,}03\%}\right) = 0{,}32$$

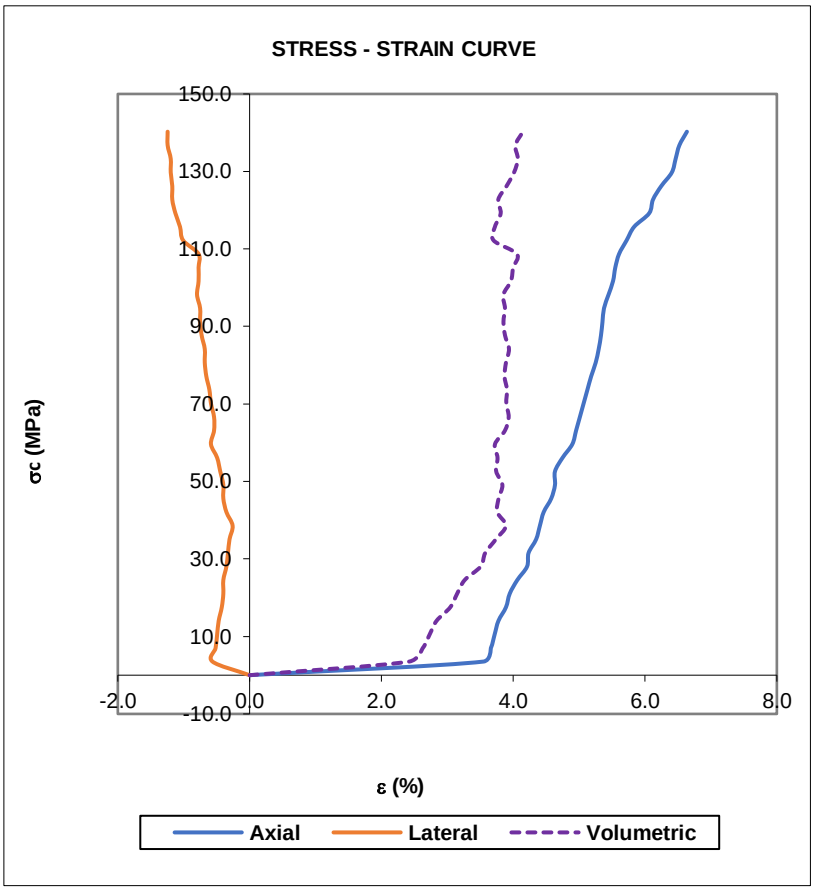
G. Hasil Pengujian Kuat Tekan Sampel 100C

1. Hasil deformasi batuan sampel 100C

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0,00	0,00	0,00	0,00
5	310	-26	50	3,51	-0,56	3,55	2,42
10	320	-26	48	7,01	-0,52	3,66	2,63
15	325	-27	48	10,52	-0,49	3,72	2,73
20	330	-27	47	14,03	-0,47	3,78	2,84
25	340	-29	47	17,53	-0,42	3,89	3,04
30	345	-29	46	21,04	-0,40	3,95	3,15
35	355	-29	46	24,55	-0,40	4,06	3,26
40	368	-30	45	28,05	-0,35	4,21	3,51
45	370	-31	45	31,56	-0,33	4,23	3,58
50	380	-31	44	35,07	-0,31	4,35	3,74
55	385	-32	43	38,57	-0,26	4,40	3,89
60	390	-30	45	42,08	-0,35	4,46	3,76
65	400	-29	46	45,59	-0,40	4,58	3,78
70	405	-29	46	49,09	-0,40	4,63	3,84
75	405	-28	47	52,60	-0,45	4,63	3,74
80	415	-28	49	56,11	-0,49	4,75	3,76
85	428	-25	50	59,61	-0,59	4,90	3,72
90	433	-27	50	63,12	-0,54	4,95	3,87
95	438	-27	50	66,63	-0,54	5,01	3,93
100	443	-26	51	70,13	-0,59	5,07	3,89
105	448	-25	51	73,64	-0,61	5,13	3,90
110	453	-24	52	77,15	-0,66	5,18	3,87
115	459	-23	52	80,65	-0,68	5,25	3,89
120	463	-23	52	84,16	-0,68	5,30	3,94
125	466	-22	53	87,66	-0,73	5,33	3,88
130	468	-21	53	91,17	-0,75	5,35	3,85
135	470	-21	53	94,68	-0,75	5,38	3,87
140	476	-20	54	98,18	-0,80	5,45	3,85

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
145	482	-21	54	101,69	-0,77	5,51	3,96
150	485	-21	54	105,20	-0,77	5,55	4,00
155	490	-21	54	108,70	-0,77	5,61	4,06
160	500	-17	60	112,21	-1,01	5,72	3,70
165	510	-16	61	115,72	-1,06	5,83	3,72
170	530	-15	63	119,22	-1,13	6,06	3,81
175	535	-14	64	122,73	-1,17	6,12	3,77
180	546	-14	64	126,24	-1,17	6,25	3,90
185	560	-14	65	129,74	-1,20	6,41	4,01
190	565	-14	65	133,25	-1,20	6,46	4,07
195	570	-14	67	136,76	-1,24	6,52	4,03
200	580	-14	67	140,26	-1,24	6,64	4,15

3. Kurva tegangan-regangan kuat tekan uniaksial sampel 100 C



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

d. Kuat tekan uniaksial (σ_c) = 140,26 MPa

e. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{108{,}70-59{,}61}{5{,}60\%-4{,}90\%} = \frac{49{,}10\ MPa}{0{,}0071} = 6921{,}50 \text{ MPa}$$

f. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-0{,}77\%)-(-0{,}58\%)}{5{,}60\%-4{,}90\%}\right) = 0{,}26$$

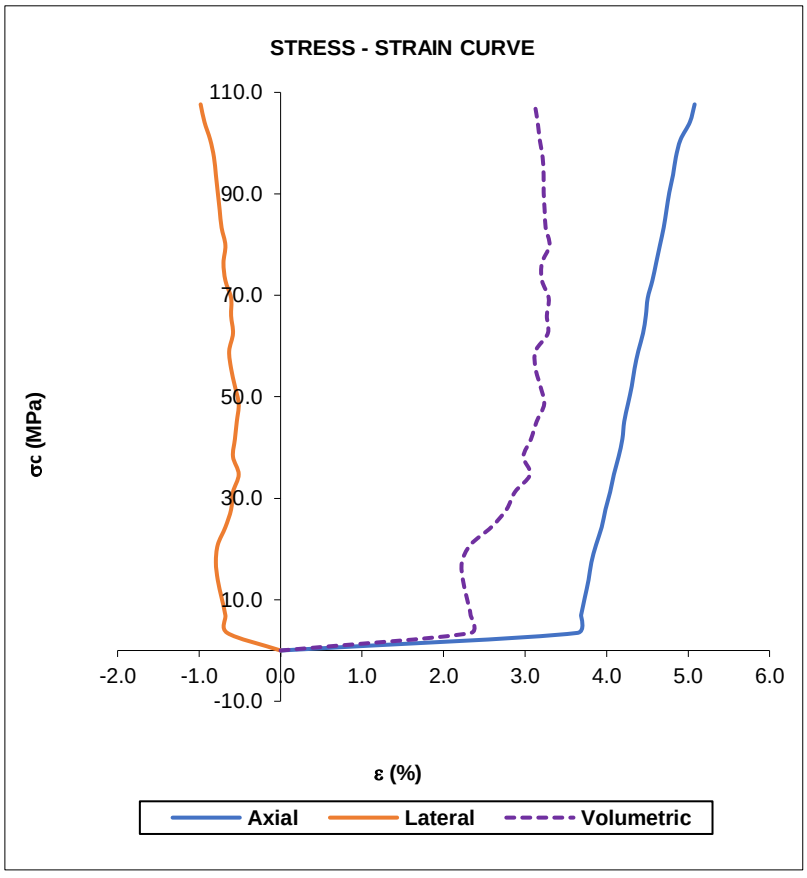
H. Hasil Pengujian Kuat Tekan Sampel 300A

I. Hasil deformasi batuan sampel 300A

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	316	-54	82	3,47	-0,65	3,64	2,33
10	320	-56	85	6,94	-0,68	3,69	2,33
15	324	-56	87	10,42	-0,72	3,73	2,28
20	328	-57	90	13,89	-0,77	3,78	2,24
25	331	-58	92	17,36	-0,79	3,81	2,23
30	336	-60	93	20,83	-0,77	3,87	2,33
35	342	-65	94	24,31	-0,68	3,94	2,59
40	346	-67	93	27,78	-0,61	3,99	2,77
45	351	-67	92	31,25	-0,58	4,04	2,88
50	355	-70	92	34,72	-0,51	4,09	3,06
55	360	-70	95	38,20	-0,58	4,15	2,98
60	364	-71	95	41,67	-0,56	4,19	3,07
65	366	-72	95	45,14	-0,54	4,22	3,14
70	370	-74	96	48,61	-0,51	4,26	3,24
75	374	-73	97	52,08	-0,56	4,31	3,19
80	377	-72	98	55,56	-0,61	4,34	3,13
85	381	-72	99	59,03	-0,63	4,39	3,13
90	386	-74	99	62,50	-0,58	4,45	3,28
95	389	-74	100	65,97	-0,61	4,48	3,27

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
100	391	-75	101	69,45	-0,61	4,50	3,29
105	396	-75	104	72,92	-0,68	4,56	3,21
110	400	-75	105	76,39	-0,70	4,61	3,21
115	404	-76	105	79,86	-0,68	4,65	3,30
120	408	-76	107	83,33	-0,72	4,70	3,25
125	411	-75	107	86,81	-0,75	4,74	3,24
130	414	-75	108	90,28	-0,77	4,77	3,23
135	418	-75	109	93,75	-0,79	4,82	3,23
140	421	-75	110	97,22	-0,82	4,85	3,22
145	426	-76	113	100,70	-0,86	4,91	3,18
150	436	-76	116	104,17	-0,93	5,02	3,15
155	441	-76	118	107,64	-0,98	5,08	3,12

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 300 A



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

g. Kuat tekan uniaksial (σ_c) = 107,64 MPa

h. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{107{,}64-3{,}47}{4{,}98\%-3{,}67\%} = \frac{104{,}17\ MPa}{0{,}014} = 7212{,}57 \text{ Mpa}$$

i. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-0{,}98\%)-(-0{,}65\%)}{4{,}98\%-3{,}67\%}\right) = 0{,}28$$

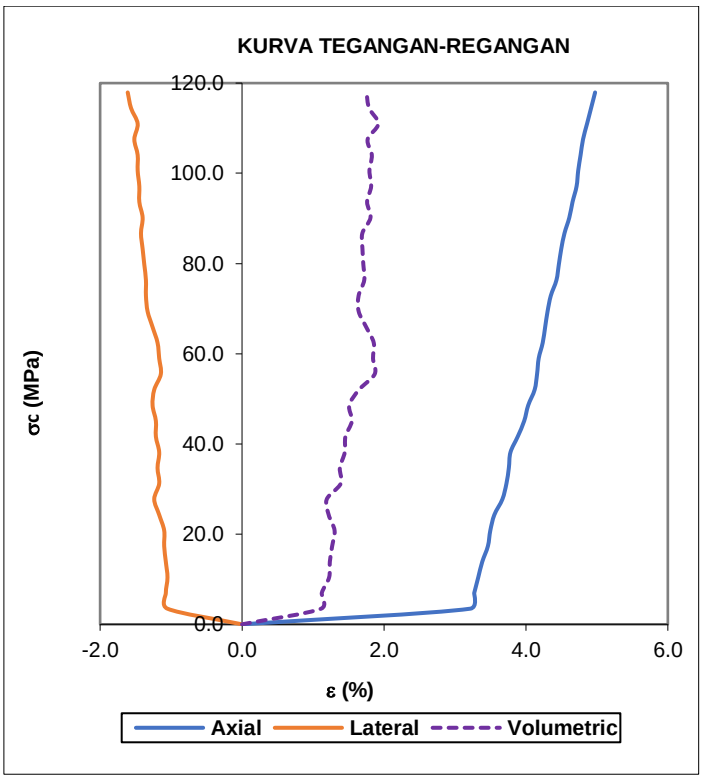
I Hasil Pengujian Kuat Tekan Sampel 300B

1. Hasil deformasi batuan sampel 300B

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0,00	0,00	0,00	0,00
5	283	-17	62	3,47	-1,05	3,21	1,11
10	288	-17	63	6,94	-1,07	3,27	1,12
15	293	-19	64	10,41	-1,05	3,33	1,23
20	298	-19	65	13,87	-1,07	3,39	1,24
25	305	-18	65	17,34	-1,10	3,46	1,27
30	308	-18	65	20,81	-1,10	3,50	1,30
35	313	-20	70	24,28	-1,17	3,56	1,22
40	323	-20	73	27,75	-1,24	3,67	1,19
45	328	-23	73	31,22	-1,17	3,73	1,39
50	331	-23	74	34,68	-1,19	3,76	1,38
55	333	-25	75	38,15	-1,17	3,78	1,45
60	342	-26	78	41,62	-1,21	3,88	1,46
65	350	-28	80	45,09	-1,21	3,98	1,55
70	355	-28	82	48,56	-1,26	4,03	1,51
75	363	-30	83	52,03	-1,24	4,12	1,65
80	366	-34	83	55,50	-1,14	4,16	1,87
85	368	-35	85	58,96	-1,17	4,18	1,85
90	373	-34	85	62,43	-1,19	4,24	1,86
95	376	-33	87	65,90	-1,26	4,27	1,75

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
100	379	-32	89	69,37	-1,33	4,31	1,64
105	383	-32	90	72,84	-1,35	4,35	1,64
110	390	-34	92	76,31	-1,35	4,43	1,72
115	393	-35	94	79,78	-1,38	4,46	1,71
120	396	-36	96	83,24	-1,40	4,50	1,70
125	400	-36	97	86,71	-1,42	4,54	1,70
130	406	-37	97	90,18	-1,40	4,61	1,81
135	410	-37	99	93,65	-1,45	4,66	1,76
140	415	-37	99	97,12	-1,45	4,71	1,82
145	417	-38	101	100,59	-1,47	4,74	1,80
150	420	-38	101	104,05	-1,47	4,77	1,83
155	423	-38	103	107,52	-1,52	4,80	1,77
160	428	-40	103	110,99	-1,47	4,86	1,92
165	433	-40	107	114,46	-1,56	4,92	1,79
170	438	-40	109	117,93	-1,61	4,98	1,75

3. Kurva tegangan-regangan kuat tekan uniaksial sampel 300 B



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

j. Kuat tekan uniaksial (σ_c) = 117,93 MPa

k. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{117{,}92-27{,}74}{5{,}98\%-3{,}67\%} = \frac{90{,}18\ MPa}{0{,}013} = 6903{,}42 \text{ MPa}$$

l. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-1{,}61\%)-(-1{,}24\%)}{5{,}98\%-3{,}67\%}\right) = 0{,}29$$

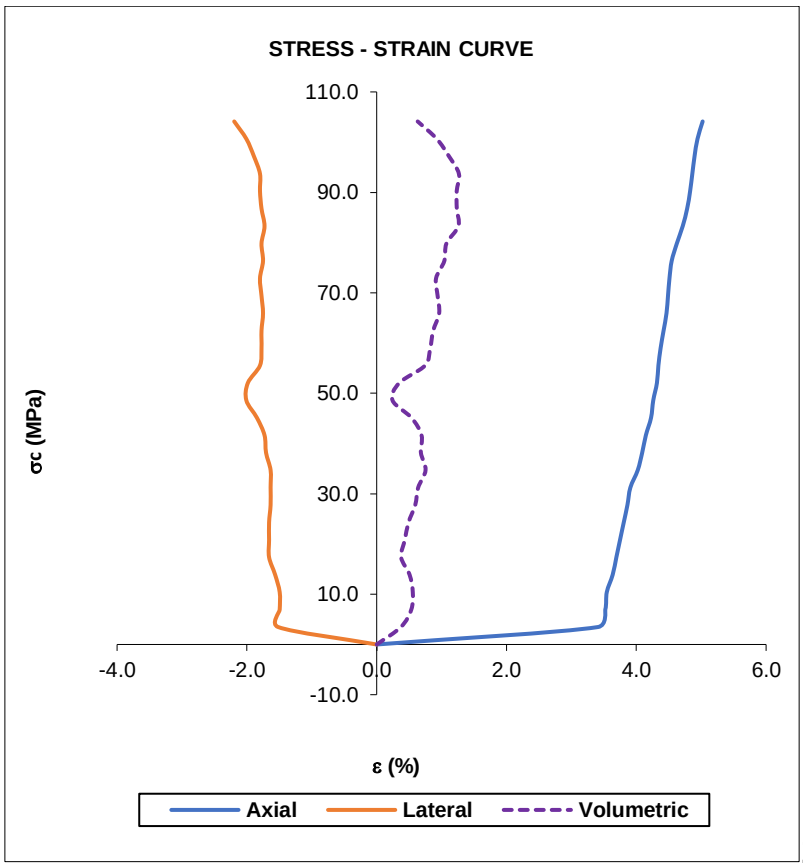
J Hasil Pengujian Kuat Tekan Sampel 300C

1. Hasil deformasi batuan sampel 300C

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0,00	0,00	0,00	0,00
5	300	-20	85	3,47	-1,52	3,41	0,37
10	310	-22	86	6,94	-1,49	3,52	0,53
15	312	-23	87	10,41	-1,49	3,55	0,56
20	320	-21	88	13,88	-1,56	3,64	0,51
25	325	-19	90	17,35	-1,66	3,69	0,38
30	330	-20	91	20,82	-1,66	3,75	0,43
35	335	-21	92	24,29	-1,66	3,81	0,49
40	340	-23	93	27,77	-1,63	3,86	0,59
45	344	-24	94	31,24	-1,63	3,91	0,64
50	354	-25	95	34,71	-1,63	4,02	0,75
55	360	-25	98	38,18	-1,70	4,09	0,68
60	365	-26	100	41,65	-1,73	4,15	0,69
65	372	-24	103	45,12	-1,84	4,23	0,54
70	375	-22	108	48,59	-2,01	4,26	0,24
75	380	-24	109	52,06	-1,99	4,32	0,35
80	382	-25	102	55,53	-1,80	4,34	0,74
85	385	-26	102	59,00	-1,77	4,37	0,82
90	389	-27	103	62,47	-1,77	4,42	0,87
95	393	-28	103	65,94	-1,75	4,47	0,96

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
100	395	-28	104	69,41	-1,77	4,49	0,94
105	397	-28	105	72,88	-1,80	4,51	0,91
110	400	-30	105	76,35	-1,75	4,55	1,04
115	407	-30	106	79,83	-1,77	4,62	1,07
120	415	-32	106	83,30	-1,73	4,72	1,26
125	421	-32	108	86,77	-1,77	4,78	1,23
130	425	-32	109	90,24	-1,80	4,83	1,23
135	428	-33	110	93,71	-1,80	4,86	1,27
140	431	-33	114	97,18	-1,89	4,90	1,11
145	435	-34	120	100,65	-2,01	4,94	0,93
150	442	-34	128	104,12	-2,20	5,02	0,63

4. Kurva tegangan-regangan kuat tekan uniaksial sampel 300 C



2

Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

m. Kuat tekan uniaksial (σ_c) = 104,12 MPa

n. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{79{,}82-13{,}88}{4{,}62\%-3{,}64\%} = \frac{65{,}94\ MPa}{0{,}009} = 6670{,}55$$

o. Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-1{,}77\%)-(-1{,}56\%)}{4{,}62\%-3{,}64\%}\right) = 0{,}21$$

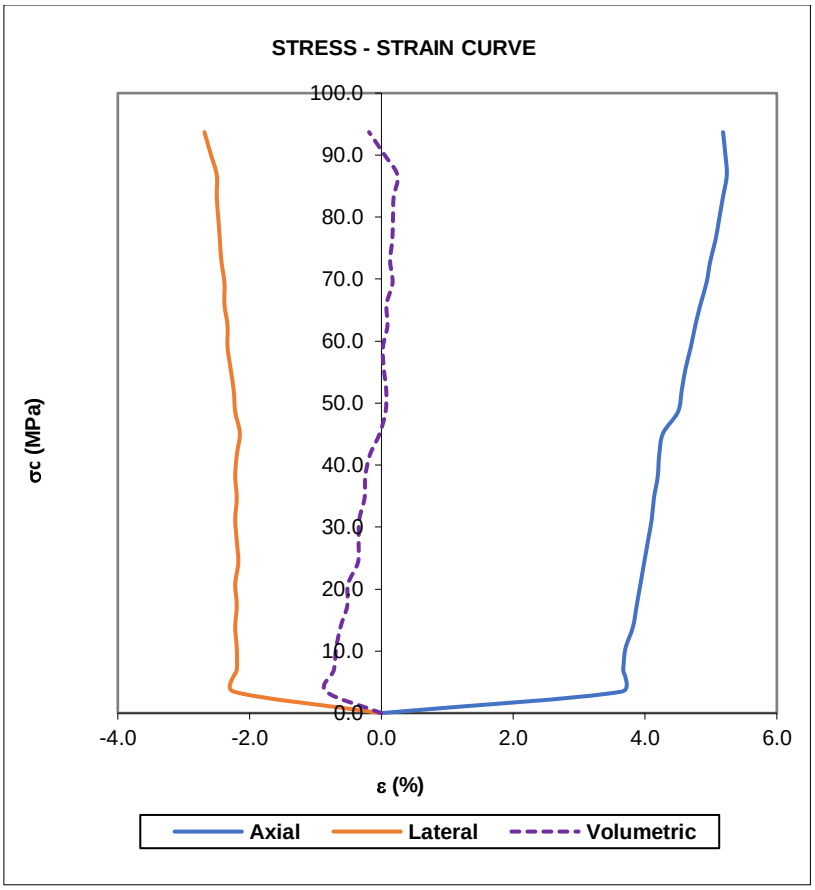
K Hasil Pengujian Kuat Tekan Sampel 500A

1. Hasil deformasi batuan sampel 500A

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	320	-10	106	3,47	-2,24	3,65	-0,84
10	322	-12	106	6,94	-2,20	3,67	-0,72
15	325	-12	106	10,41	-2,20	3,70	-0,69
20	335	-12	107	13,88	-2,22	3,82	-0,62
25	340	-13	107	17,35	-2,20	3,87	-0,52
30	345	-13	108	20,82	-2,22	3,93	-0,51
35	350	-15	108	24,29	-2,17	3,99	-0,36
40	355	-16	110	27,77	-2,20	4,04	-0,35
45	360	-16	111	31,24	-2,22	4,10	-0,34
50	363	-17	111	34,71	-2,20	4,14	-0,26
55	368	-18	113	38,18	-2,22	4,19	-0,25
60	370	-19	113	41,65	-2,20	4,21	-0,18
65	375	-21	113	45,12	-2,15	4,27	-0,03
70	395	-21	116	48,59	-2,22	4,50	0,06
75	400	-20	116	52,06	-2,24	4,56	0,07
80	405	-18	116	55,53	-2,29	4,61	0,04
85	412	-17	117	59,00	-2,34	4,69	0,02
90	418	-17	117	62,47	-2,34	4,76	0,09
95	425	-16	118	65,94	-2,38	4,84	0,08
100	433	-16	118	69,41	-2,38	4,93	0,17
105	438	-15	119	72,88	-2,43	4,99	0,13

110	445	-15	120	76,35	-2,45	5,07	0,17
115	450	-15	121	79,83	-2,48	5,13	0,18
120	455	-15	122	83,30	-2,50	5,18	0,19
125	460	-14	122	86,77	-2,52	5,24	0,20
130	458	-13	124	90,24	-2,59	5,22	0,03
135	455	-13	128	93,71	-2,69	5,18	-0,19

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 500A



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

p. Kuat tekan uniaksial (σ_c) = 93,71 MPa

q. Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{86{,}77-48{,}59}{5{,}24\%-4{,}50\%} = \frac{38{,}17\ MPa}{0{,}007} = 5155{,}88 \text{ MPa}$$

r. Nibah Poisson (υ)

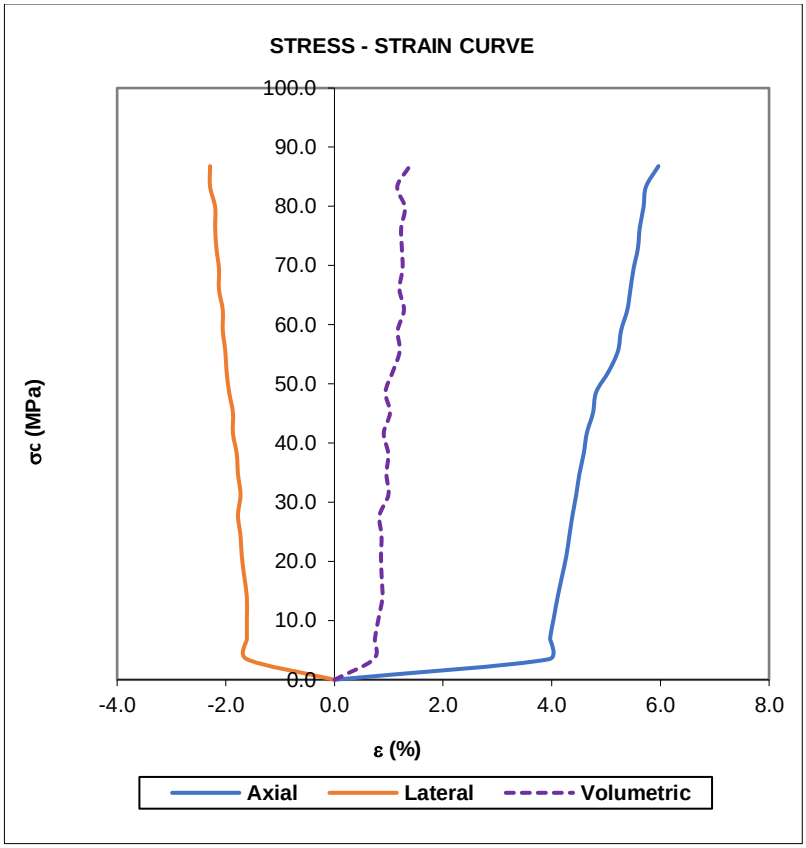
$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-2{,}50\%)-(-2{,}22\%)}{5{,}24\%-4{,}50\%}\right) = 0{,}38$$

L Hasil Pengujian Kuat Tekan Sampel 500B

1. Hasil deformasi batuan sampel 500B

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	344	66	3	3,47	-1,61	3,95	0,72
10	346	66	3	6,94	-1,61	3,97	0,74
15	352	67	2	10,42	-1,61	4,04	0,81
20	358	67	2	13,89	-1,61	4,11	0,88
25	365	69	2	17,36	-1,66	4,19	0,87
30	372	69	4	20,83	-1,71	4,27	0,86
35	377	68	6	24,31	-1,73	4,32	0,87
40	382	68	8	27,78	-1,78	4,38	0,83
45	388	66	8	31,25	-1,73	4,45	0,99
50	393	66	10	34,72	-1,78	4,51	0,96
55	400	65	12	38,20	-1,80	4,59	0,99
60	405	67	13	41,67	-1,87	4,65	0,91
65	415	67	13	45,14	-1,87	4,76	1,02
70	420	68	15	48,61	-1,94	4,82	0,94
75	440	69	16	52,08	-1,99	5,05	1,08
80	455	70	16	55,56	-2,01	5,22	1,20
85	460	71	17	59,03	-2,06	5,28	1,16
90	470	71	17	62,50	-2,06	5,39	1,28
95	475	72	19	65,97	-2,13	5,45	1,20
100	480	72	19	69,45	-2,13	5,51	1,25
105	487	73	20	72,92	-2,17	5,59	1,24
110	490	73	21	76,39	-2,20	5,62	1,23
115	496	73	21	79,86	-2,20	5,69	1,30
120	500	73	25	83,33	-2,29	5,73	1,16
125	520	73	25	86,81	-2,29	5,96	1,39

3. Kurva tegangan-regangan kuat tekan uniaksial sampel 500 B



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

Kuat tekan uniaksial (σ_c) = 86,81 MPa

Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{48{,}61-6{,}94}{4{,}81\%-3{,}96\%} = \frac{38{,}17\ MPa}{0{,}0085} = 4909{,}43 \text{ MPa}$$

Nibah Poisson (υ)

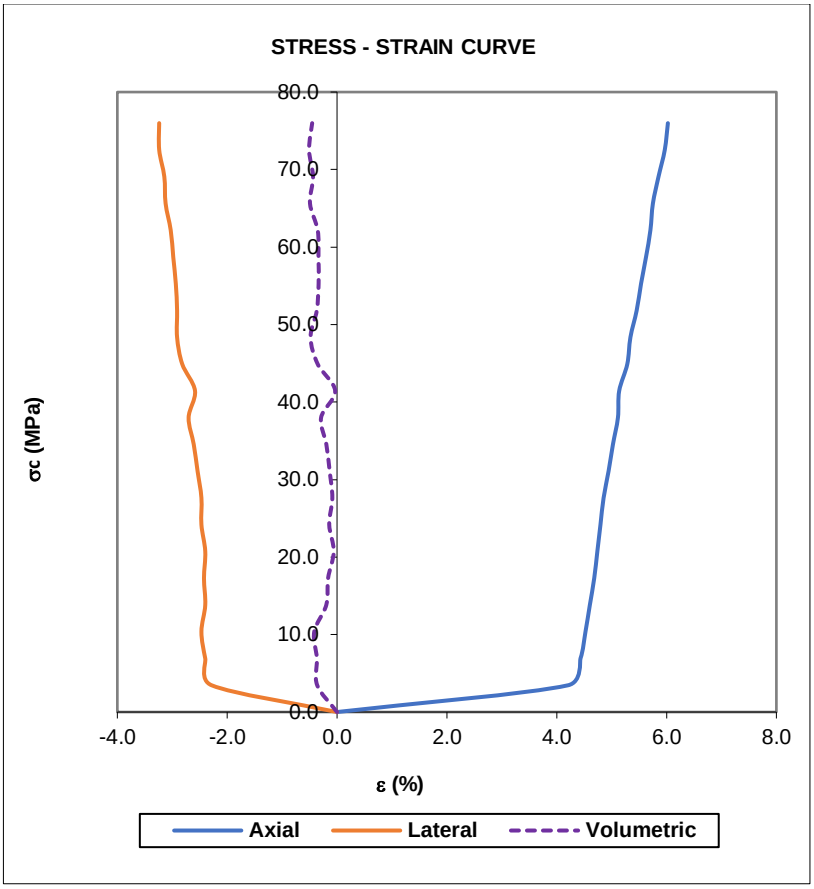
$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-1{,}94\%)-(-1{,}61\%)}{4{,}81\%-3{,}96\%}\right) = 0{,}39$$

M Hasil Pengujian Kuat Tekan Sampel 500C

1. Hasil deformasi batuan sampel 500C

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	370	85	13	3,45	-2,28	4,21	-0,36
10	390	90	13	6,91	-2,40	4,43	-0,37
15	398	93	13	10,36	-2,47	4,52	-0,42
20	405	90	13	13,82	-2,40	4,60	-0,20
25	412	89	15	17,27	-2,42	4,68	-0,16
30	417	88	15	20,72	-2,40	4,74	-0,06
35	422	88	18	24,18	-2,47	4,80	-0,14
40	427	88	18	27,63	-2,47	4,85	-0,09
45	435	90	19	31,09	-2,54	4,94	-0,13
50	442	92	20	34,54	-2,61	5,02	-0,19
55	450	93	23	37,99	-2,70	5,11	-0,29
60	452	95	16	41,45	-2,59	5,14	-0,03
65	465	95	26	44,90	-2,82	5,29	-0,35
70	470	98	27	48,36	-2,91	5,34	-0,48
75	480	98	27	51,81	-2,91	5,46	-0,37
80	487	98	28	55,26	-2,94	5,54	-0,34
85	495	100	28	58,72	-2,98	5,63	-0,34
90	502	101	29	62,17	-3,03	5,71	-0,35
95	506	103	31	65,63	-3,12	5,75	-0,49
100	515	103	32	69,08	-3,15	5,85	-0,44
105	525	105	34	72,53	-3,24	5,97	-0,51
110	530	105	34	75,99	-3,24	6,02	-0,45

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 500 C



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

Kuat tekan uniaksial (σ_c) = 75,99 MPa

Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{41{,}45-6{,}91}{5{,}14\%-4{,}43\%} = \frac{34{,}54\ MPa}{0{,}007} = 4901{,}29 \text{ MPa}$$

Nibah Poisson (υ)

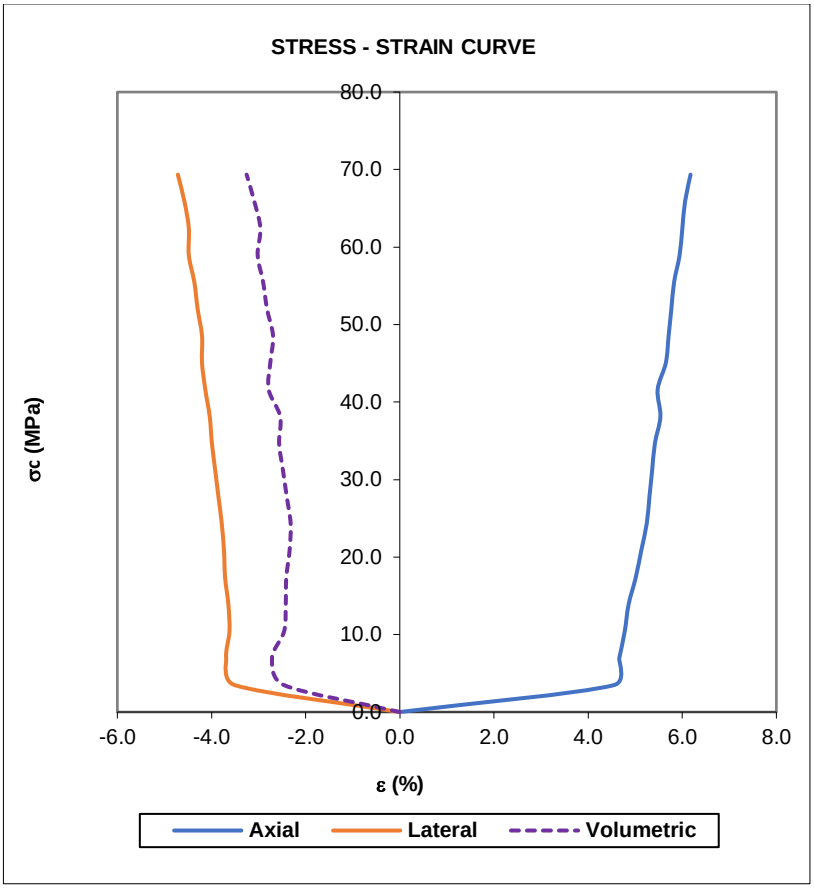
$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-2{,}59\%)-(-2{,}40\%)}{5{,}14\%-4{,}43\%}\right) = 0{,}26$$

N Hasil Pengujian Kuat Tekan Sampel 800A

1. Hasil deformasi batuan sampel 800A

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	390	140	10	3,47	-3,50	4,55	-2,46
10	400	145	13	6,93	-3,69	4,66	-2,71
15	410	145	10	10,40	-3,62	4,78	-2,46
20	417	145	11	13,87	-3,64	4,86	-2,42
25	430	146	13	17,34	-3,71	5,01	-2,41
30	440	146	14	20,80	-3,73	5,13	-2,34
35	450	147	15	24,27	-3,78	5,24	-2,32
40	455	149	16	27,74	-3,85	5,30	-2,40
45	460	151	17	31,21	-3,92	5,36	-2,48
50	465	153	18	34,67	-3,99	5,42	-2,56
55	475	155	18	38,14	-4,04	5,54	-2,54
60	470	159	18	41,61	-4,13	5,48	-2,79
65	485	162	18	45,08	-4,20	5,65	-2,75
70	490	162	18	48,54	-4,20	5,71	-2,69
75	495	165	19	52,01	-4,30	5,77	-2,82
80	500	168	19	55,48	-4,37	5,83	-2,90
85	510	170	22	58,95	-4,48	5,94	-3,02
90	515	170	22	62,41	-4,48	6,00	-2,96
95	520	174	22	65,88	-4,58	6,06	-3,09
100	530	180	22	69,35	-4,72	6,18	-3,25

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 800 A



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

Kuat tekan uniaksial (σ_c) = 69,35 MPa

Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{38{,}14-6{,}93}{5{,}53\%-4{,}66\%} = \frac{34{,}54\ MPa}{0{,}0087} = 3570{,}33 \text{ MPa}$$

Nibah Poisson (υ)

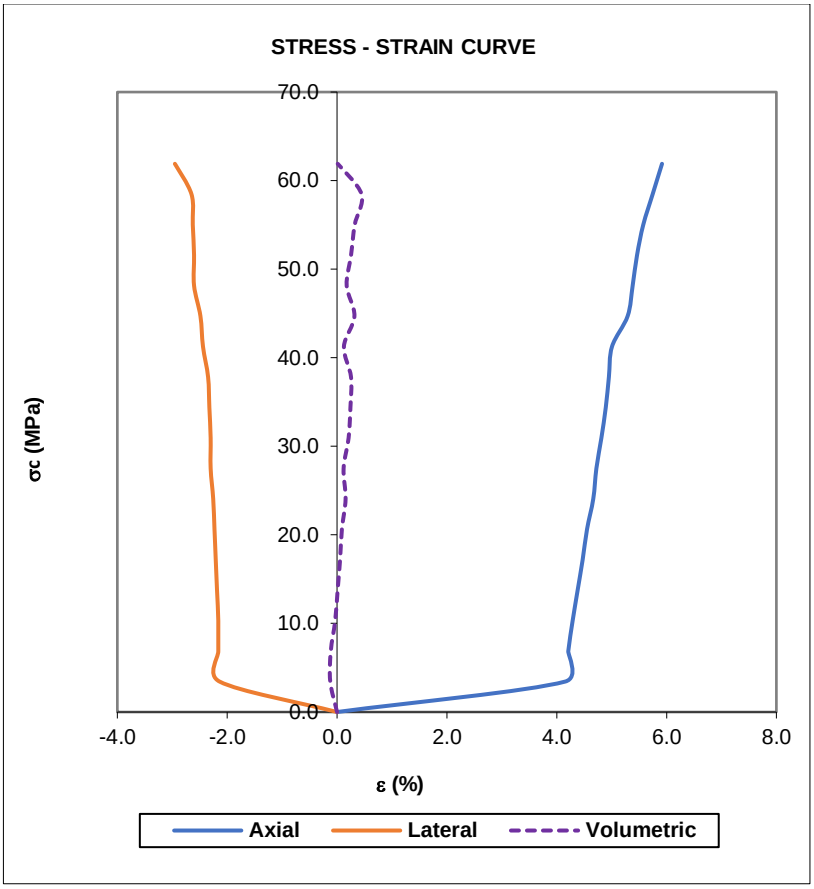
$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-4{,}04\%)-(-3{,}67\%)}{5{,}53\%-4{,}66\%}\right) = 0{,}44$$

O Hasil Pengujian Kuat Tekan Sampel 800 B

1. Hasil deformasi batuan sampel 800 B

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	365	67	25	3,44	-2,14	4,15	-0,12
10	370	68	24	6,88	-2,14	4,21	-0,07
15	377	69	24	10,32	-2,16	4,29	-0,03
20	385	70	24	13,76	-2,19	4,38	0,01
25	393	71	24	17,19	-2,21	4,47	0,06
30	400	72	24	20,63	-2,23	4,55	0,09
35	410	73	24	24,07	-2,25	4,67	0,16
40	415	74	25	27,51	-2,30	4,72	0,12
45	423	75	25	30,95	-2,32	4,81	0,16
50	430	76	25	34,39	-2,35	4,89	0,20
55	435	77	25	37,83	-2,37	4,95	0,21
60	440	80	27	41,27	-2,49	5,01	0,03
65	465	81	27	44,71	-2,51	5,29	0,27
70	473	85	27	48,15	-2,60	5,38	0,18
75	480	85	27	51,58	-2,60	5,46	0,25
80	490	86	27	55,02	-2,63	5,58	0,32
85	505	87	27	58,46	-2,65	5,75	0,45
90	520	100	27	61,90	-2,95	5,92	0,01

2. Kurva tegangan-regangan kuat tekan uniaksial sampel 800 B



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

Kuat tekan uniaksial (σ_c) = 61,90 MPa

Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{41{,}27-6{,}88}{5{,}00\%-4{,}21\%} = \frac{34{,}39\ MPa}{0{,}0079} = 4317{,}25 \text{ MPa}$$

Nibah Poisson (υ)

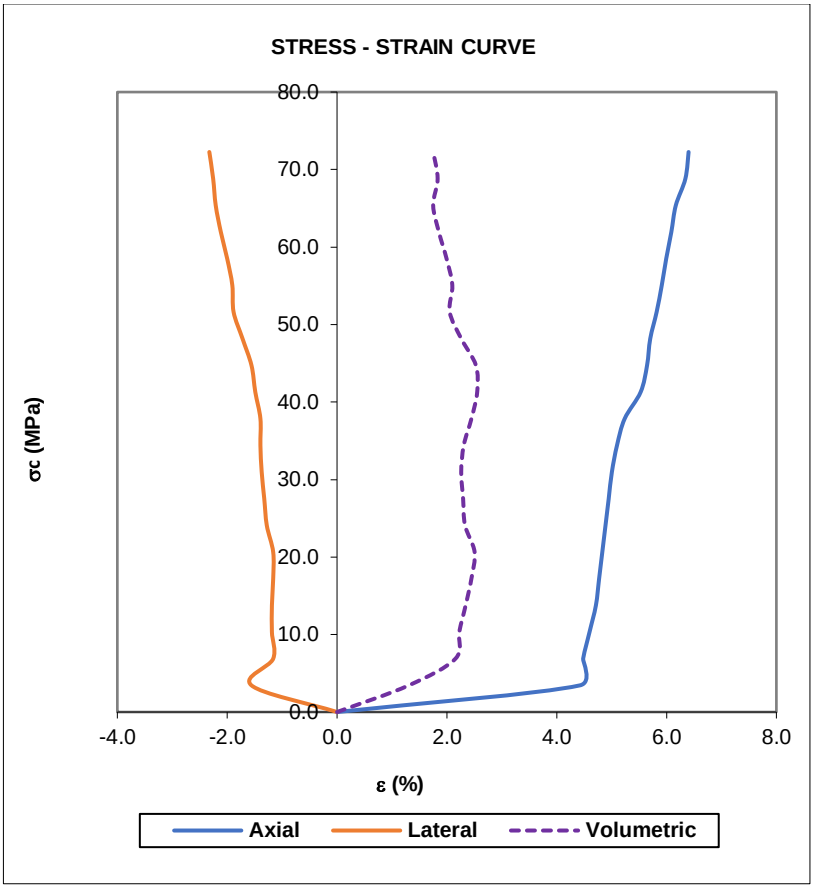
$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-2{,}44\%)-(-2{,}16\%)}{5{,}00\%-4{,}21\%}\right) = 0{,}35$$

P Hasil pengujian kuat tekan sampel 800 C

1. Hasil deformasi batuan sampel 800 C

F (kN)	Aksial	Lateral 1	Lateral 2	σc	ε Lateral (%)	ε Aksial (%)	ε Volumetrik (%)
0	0	0	0	0	0	0	0
5	380	90	-23	3,44	-1,56	4,42	1,31
10	385	73	-23	6,88	-1,16	4,48	2,16
15	395	75	-24	10,32	-1,19	4,60	2,23
20	405	76	-25	13,76	-1,19	4,71	2,34
25	410	77	-27	17,21	-1,16	4,77	2,45
30	415	77	-27	20,65	-1,16	4,83	2,50
35	420	78	-23	24,09	-1,28	4,89	2,33
40	425	78	-21	27,53	-1,33	4,95	2,30
45	430	79	-20	30,97	-1,37	5,00	2,26
50	438	80	-20	34,41	-1,40	5,10	2,31
55	450	80	-20	37,85	-1,40	5,24	2,45
60	475	82	-18	41,29	-1,49	5,53	2,55
65	485	85	-18	44,73	-1,56	5,64	2,53
70	490	90	-16	48,18	-1,72	5,70	2,26
75	500	95	-14	51,62	-1,88	5,82	2,05
80	508	95	-13	55,06	-1,91	5,91	2,10
85	515	97	-11	58,50	-2,00	5,99	1,99
90	523	100	-9	61,94	-2,12	6,09	1,85
95	530	103	-8	65,38	-2,21	6,17	1,75
100	545	103	-6	68,82	-2,26	6,34	1,83
105	550	106	-6	72,26	-2,33	6,40	1,75

1. Kurva tegangan-regangan kuat tekan uniaksial sampel 800 C



Berdasarkan Kurva tegangan-regangan diatas, dapat ditentukan nilai kuat tekan, modulus Young, dan nisbah Poisson sebagai berikut.

Kuat tekan uniaksial (σ_c) = 72,26 MPa

Modulus Young (E)

$$E = \frac{\Delta\sigma}{\Delta\varepsilon} = \frac{37{,}85-13{,}76}{5{,}24\%-4{,}71\%} = \frac{24{,}09\ MPa}{0{,}0052} = 4317{,}25 \text{ MPa}$$

Nibah Poisson (υ)

$$\upsilon = \frac{\varepsilon_{lateral}}{\varepsilon_{aksial}} = -\left(\frac{(-1{,}40\%)-(-1{,}19\%)}{5{,}24\%-4{,}71\%}\right) = 0{,}39$$

Q Hasil Pengujian Kuat Tekan Uniaksial

No.	Temperatur (^{O}C)	Kode sampel	Lithologi	UCS (MPa)	Modulus Young (MPa)	Nisbah Poisson Ratio
1	25	25A	Basal	121,78	7.522,77	0,08
2		25B	Basal	138,57	8.358,87	0,11
3		25C	Basal	128,12	8.113,49	0,27
4	100	100A	Basal	141,70	7.273,33	0,20
5		100B	Basal	145,77	7.133,02	0,32
6		100C	Basal	140,26	6.921,50	0,26
7	300	300A	Basal	107,64	7.212,57	0,23
8		300B	Basal	117,93	6.903,42	0,29
9		300C	Basal	104,12	6.670,55	0,21
10	500	500A	Basal	93,71	5.155,89	0,38
11		500B	Basal	86,81	4.909,43	0,39
12		500C	Basal	75,99	4.901,29	0,26
13	800	800A	Basal	69,35	3.570,33	0,40
14		800B	Basal	61,90	4.317,25	0,35
15		800C	Basal	72,26	4.599,19	0,39

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