DAFTAR LAMPIRAN

1. Surat Keterangan Hasil Pengujian Laboratorium Bahan Teknik UNIVERSITAS GADJAH MADA

LABORATORIUM BAHAN TEKNIK
DEPARTEMEN TEKNIK MESIN DAN INDUSTRI
FAKULTAS TEKNIK UNIVERSITAS GADJAH MADA
Jl. Grafika No. 2, Kampus UGM Yogyakarta, 55281
Telp. (0274) 521673, Fax. (0274) 521673

No. : /Lab Bahan Teknik/DTMI/UGM/2019.
Lamp. : -
Hal : SURAT KETERANGAN

SURAT KETERANGAN

Kami selaku pengelola Laboraturium Bahan Teknik Departemen Teknik Mesin dan Industri Universitas Gajah Mada menerangkan bahwa mahasiswa tersebut di bawah ini :

Nama	**: Afan Mardian**
NPM	**: 20163020071**
Program Studi	**: D3 Teknik Mesin**
Fakultas	**: Teknik, Universitas Muhammadiyah Yogyakarta**

Telah bebas dari segala tanggungan di laboratorium kami, dan telah selesai melakukan penelitian di Laboratorium Bahan Teknik Departemen Teknik Mesin dan Industri Universitas Gajah Mada.

Demikian surat keterangan ini dibuat dengan sebenar-benarnya, untuk dimanfaatkan sebagaimana mestinya.

Yogyakarta 20 Desember 2019
Teknisi Laboratorium
Bahan Teknik UGM

Srivanta
NIP. 19770101201409100 2

2. Hasil Perhitungan Uji Kekerasan

HASIL UJI KEKERASAN KAMPAS ORIGINAL

TITIK KE 1

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,97^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-0,94})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,31})}$$

$$= \frac{124,96}{7,85(2,5-2,3)}$$

$$= \frac{124,96}{7,85.0,2}$$

$$= \frac{124,96}{1,57}$$

=79,57 BHN

TITIK KE 2

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,1^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-1})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,25})}$$

$$= \frac{124,96}{7,85(2,5-2,29)}$$

$$= \frac{124,96}{7,85.0,21}$$

$$= \frac{124,96}{1,64}$$

=76, 19 BHN

TITIK KE 3

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,1^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-1})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,25})}$$

$$= \frac{124,96}{7,85(2,5-2,29)}$$

$$= \frac{124,96}{7,85.0,21}$$

$$= \frac{124,96}{1,64}$$

=76, 19 BHN

HASIL UJI KEKERASAN KAMPAS HASIL COR

TITIK KE 1

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-1,02^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-1,04})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,21})}$$

$$= \frac{124,96}{7,85(2,5-2,28)}$$

$$= \frac{124,96}{7,85.0,22}$$

$$= \frac{124,96}{1,72}$$

=72,65 BHN

TITIK KE 2

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,1^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-1})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,25})}$$

$$= \frac{124,96}{7,85(2,5-2,29)}$$

$$= \frac{124,96}{7,85.0,21}$$

$$= \frac{124,96}{1,64}$$

=76, 19 BHN

TITIK KE 3

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-105^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-1.10)}}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,15)}}$$

$$= \frac{124,96}{7,85(2,5-2,26)}$$

$$= \frac{124,96}{7,85.0,24}$$

$$= \frac{124,96}{1,884}$$

=66, 32 BHN

HASIL UJI KEKERASAN KAMPAS IMITASI

TITIK KE 1

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,92^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-0,84)}}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,41)}}$$

$$= \frac{124,96}{7,85(2,5-2,32)}$$

$$= \frac{124,96}{7,85.0,18}$$

$$= \frac{124,96}{1,41}$$

=88,62 BHN

TITIK KE 2

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,97^2})}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-0,94)}}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,31)}}$$

$$= \frac{124,96}{7,85(2,5-2,3)}$$

$$= \frac{124,96}{7,85.0,2}$$

$$= \frac{124,96}{1,57}$$

=79,57 BHN

TITIK KE 3

$$\mathbf{H_B} = \frac{2P}{\pi D(D-\sqrt{D^2-d^2})}$$

$$= \frac{2.62,48}{3,14.2,5(2,5-\sqrt{2,5^2-0,1^2)}}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{6,25-1)}}$$

$$= \frac{124,96}{7,85(2,5-\sqrt{5,25)}}$$

$$= \frac{124,96}{7,85(2,5-2,29)}$$

$$= \frac{124,96}{7,85.0,21}$$

$$= \frac{124,96}{1,64}$$

=76, 19 BHN

3. Hasil Perhitungan Uji Impak

HASIL UJI IMPACT KAMPAS ORIGINAL

Epat=150(cos152-cos153)

150(-0,88-(-0,89))

150.0,01

1,5 J

ketangguhan impact=$\frac{Epat}{luas\ penampang}$

=$\frac{1,5}{550\times10^{-6}}$

=2727, 27 J/mm^2

HASIL UJI IMPACT HASIL COR

Epat=150(cos150-cos153)

150(-0,86-(-0,89))

150.0,03

4,5 J

ketangguhan impact=$\frac{Epat}{luas\ penampang}$

=$\frac{4,5}{550\times10^{-6}}$

=8181,81 J/mm^2

HASIL UJI IMPACT KAMPAS IMITASI

Epat=150(cos151-cos153)

150(-0,87-(-0,89))

150.0,02

3 J

ketangguhan impact=$\frac{Epat}{luas\ penampang}$

=$\frac{3}{550\times10^{-6}}$

=5454,54 J/mm^2