

**PENGARUH CAMPURAN LATEKS SEBAGAI SUBSTITUSI CAMPURAN  
ASPAL TERHADAP PERKERASAN LENTUR JALAN**



**LAPORAN AKHIR**

**Palembang, Juli 2022  
Disetujui oleh Pembimbing  
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ASPAL TERHADAP PERKERASAN LENTUR JALAN**

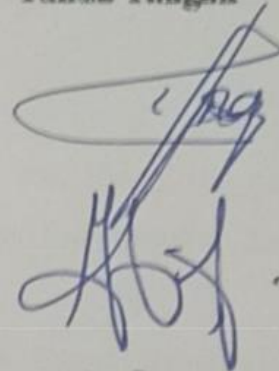
**LAPORAN AKHIR**

**Disetujui Oleh Penguji  
Laporan Akhir Jurusan Teknik Sipil  
Politeknik Negeri Sriwijaya**

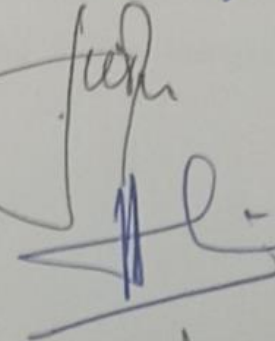
**Nama Penguji**

**Tanda Tangan**

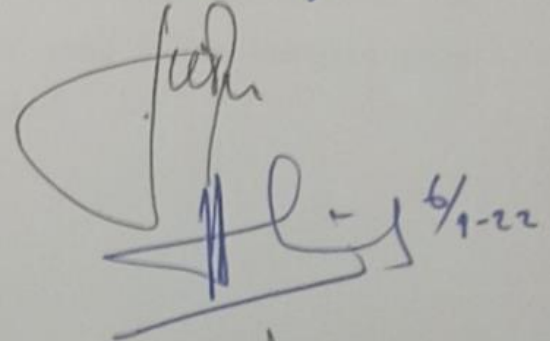
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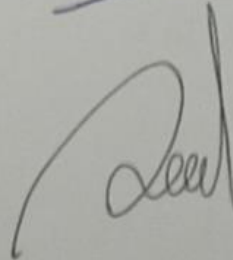
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JENIS PENGUJIAN :ANALISA SARINGAN

ANALISA SARINGAN 1/2

| split<br>1/2    |                |              |          | rata rata |                |              |          |
|-----------------|----------------|--------------|----------|-----------|----------------|--------------|----------|
| ukuran saringan | berat tertahan | tertahan (%) | lolos(%) | lolos(%)  | berat tertahan | tertahan (%) | lolos(%) |
| 19.0            | 0              | 0.000        | 100      | 100       | 0              | 0            | 100      |
| 12.5            | 1280           | 32.562       | 67.438   | 71.032    | 915            | 25.374       | 74.626   |
| 9.5             | 2392           | 60.850       | 39.150   | 32.554    | 2670           | 74.043       | 25.957   |
| 4.75            | 3684           | 93.717       | 6.283    | 6.664     | 3352           | 92.956       | 7.044    |
| 2.36            | 3920           | 99.720       | 0.280    | 0.265     | 3597           | 99.750       | 0.250    |
| 1.18            | 3925           | 99.847       | 0.153    | 0.160     | 3600           | 99.834       | 0.166    |
| 0.60            | 0              | 0            | 100      | 100       | 0              | 0            | 100      |
| 0.30            | 0              | 0            | 100      | 100       | 0              | 0            | 100      |
| 0.15            | 0              | 0            | 100      | 100       | 0              | 0            | 100      |
| 0.075           | 0              | 0            | 100      | 100       | 0              | 0            | 100      |
| pan             | 0              | 0            | 100      | 100       | 0              | 0            | 100      |
| berat sampel    | 3931           |              |          | 0         | 3606           |              |          |

JENIS PENGUJIAN :ANALISA SARINGAN

ANALISA SAARINGAN 1/1

screni  
ngl/1

| ukuran saringan | berat tertahan | tertahan (%) | lolos(%) | lolos(%) | berat tertahan | tertahan (%) | lolos(%) |
|-----------------|----------------|--------------|----------|----------|----------------|--------------|----------|
| 19.0            | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| 12.5            | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| 9.5             | 9              | 0.541        | 99.459   | 99.436   | 11             | 0.587        | 99.413   |
| 4.75            | 925            | 55.589       | 44.411   | 41.672   | 1145           | 61.067       | 38.933   |
| 2.36            | 1365           | 82.031       | 17.969   | 37.284   | 1565           | 43.400       | 56.600   |
| 1.18            | 1490           | 89.543       | 10.457   | 10.028   | 1695           | 90.400       | 9.600    |
| 0.60            | 1560           | 93.750       | 6.250    | 5.925    | 1770           | 94.400       | 5.600    |
| 0.30            | 1587           | 95.373       | 4.627    | 4.394    | 1797           | 95.840       | 4.160    |
| 0.15            | 1619           | 97.296       | 2.704    | 2.499    | 1832           | 97.707       | 2.293    |
| 0.075           | 1640           | 98.558       | 1.442    | 1.334    | 1852           | 98.773       | 1.227    |
| pan             | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| berat sampel    | 1664           |              |          | 0        | 1875           |              |          |

JENIS PENGUJIAN :ANALISA SARINGAN

## ANALISA SARINGAN ABU BATU

abu  
batu

| ukuran saringan | berat tertahan | tertahan (%) | lolos(%) | lolos(%) | berat tertahan | tertahan (%) | lolos(%) |
|-----------------|----------------|--------------|----------|----------|----------------|--------------|----------|
| 19.0            | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| 12.5            | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| 9.5             | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| 4.75            | 54             | 3.005        | 96.995   | 97.544   | 36             | 1.907        | 98.093   |
| 2.36            | 544            | 30.273       | 69.727   | 70.987   | 524            | 27.754       | 72.246   |
| 1.18            | 928            | 51.642       | 48.358   | 50.768   | 884            | 46.822       | 53.178   |
| 0.60            | 1216           | 67.668       | 32.332   | 35.472   | 1159           | 61.388       | 38.612   |
| 0.30            | 1342           | 74.680       | 25.320   | 29.079   | 1268           | 67.161       | 32.839   |
| 0.15            | 1522           | 84.697       | 15.303   | 19.516   | 1440           | 76.271       | 23.729   |
| 0.075           | 1589           | 88.425       | 11.575   | 12.170   | 1647           | 87.235       | 12.765   |
| pan             | 0              | 0            | 100      | 100      | 0              | 0            | 100      |
| berat sampel    | 1797           |              |          | 0        | 1888           |              |          |

JENIS PENGUJIAN :BERAT JENIS DAN PENYERAPAN

AGREGAT BERAT JENIS DAN PENYERAPAN AGREGAT 1/2

|  |          |          |
|--|----------|----------|
| AG1/2                                  |          |          |
| pemeriksaan                            | A        | B        |
| berat benda uji kering oven            | 1254.000 | 1267.000 |
| berat benda uji kering permukaan jenuh | 1267.000 | 1279.000 |
| berat pikno meter + benda uji + air    | 779.000  | 787.000  |

| pemeriksaan               | A     | B     | RATA RATA |
|---------------------------|-------|-------|-----------|
| BJ BULK                   | 2.570 | 2.575 | 2.572     |
| BJ KERING PERMUKAAN JENUH | 2.596 | 2.600 | 2.598     |
| BJ SEMU                   | 2.640 | 2.640 | 2.640     |
| PENYERAPAN                | 1.037 | 0.947 | 0.992     |

JENIS PENGUJIAN :BERAT JENIS DAN PENYERAPAN

AGREGAT BERAT JENIS DAN PENYERAPAN AGREGAT 1/1

AG1/1

| pemeriksaan                            | A        | B        |
|--|----------|----------|
| berat benda uji kering oven            | 1193.000 | 1220.000 |
| berat benda uji kering permukaan jenuh | 1208.000 | 1231.000 |
| berat pikno meter + benda uji + air    | 742.000  | 754.000  |

| pemeriksaan               | A     | B     | RATA RATA |
|---------------------------|-------|-------|-----------|
| BJ BULK                   | 2.560 | 2.558 | 2.559     |
| BJ KERING PERMUKAAN JENUH | 2.592 | 2.581 | 2.586     |
| BJ SEMU                   | 2.645 | 2.618 | 2.632     |
| PENYERAPAN                | 1.257 | 0.902 | 1.079     |

JENIS PENGUJIAN :BERAT JENIS DAN PENYERAPAN

AGREGAT BERAT JENIS DAN PENYERAPAN ABU BATU

ABU BATU

|  |         |
|--|---------|
| pemeriksaan                            | A       |
| berat benda uji kering oven            | 849.500 |
| berat benda uji kering permukaan jenuh | 721.200 |
| berat pikno meter + benda uji + air    | 102.600 |

|                           |       |
|---------------------------|-------|
| pemeriksaan               | A     |
| BJ BULK                   | 2.508 |
| BJ KERING PERMUKAAN JENUH | 2.561 |
| BJ SEMU                   | 2.650 |
| PENYERAPAN                | 2.145 |



JENIS PENGUJIAN : KEAUSAN AGREGAT DENGAN *MESIN LOS ANGLES*

|                            |      |
|----------------------------|------|
| keausan                    |      |
| BERAT AWAL                 | 5000 |
| BERAT TERTAHAN DI SARINGAN | 4070 |
| JUMLAH PUTARAN             | 500  |
| JUMLAH BOLA                | 11   |
| KEAUSAN                    | 19   |

JENIS PENGUJIAN : BERAT JENIS ASPAL

|                      |         |         |
|----------------------|---------|---------|
| ASPAL                |         |         |
| PEMERIKSAAN          | I       | II      |
| PIKNOMETER+TUTUP     | 182.300 | 187.900 |
| PINOMETER+AIR        | 310.600 | 312.800 |
| PIKNOMETER+ASPAL     | 229.200 | 238.500 |
| PIKNOMETER+ASPAL+AIR | 311.800 | 314.300 |

|            |       |
|------------|-------|
| BJ ASPAL 1 | 1.026 |
| BJ ASPAL 2 | 1.031 |
| RATA-RATA  | 1.029 |

|                   |       |
|-------------------|-------|
| BJ ASPAL + LATEKS |       |
| PENGUJIAN         |       |
| ASPAL + LATEKS 4% | 1.042 |
| ASPAL + LATEKS 6% | 1.033 |
| ASPAL + LATEKS 8% | 1.030 |

JENIS PENGUJIAN : PENETRASI DAN DAKTILITAS

|                   |  |      |
|-------------------|--|------|
| PENETRASI ASPAL   |  |      |
| ASPAL NORMAL      |  | 63.8 |
| ASPAL + LATEKS 4% |  | 54.0 |
| ASPAL + LATEKS 6% |  | 64.4 |
| ASPAL + LATEKS 8% |  | 64.6 |

| DAKTILITAS        |  | I   | II  |
|-------------------|--|-----|-----|
| ASPAL             |  | 150 | 150 |
| ASPAL + LATEKS 4% |  | 89  | 91  |
| ASPAL + LATEKS 6% |  | 81  | 83  |
| ASPAL + LATEKS 8% |  | 78  | 80  |

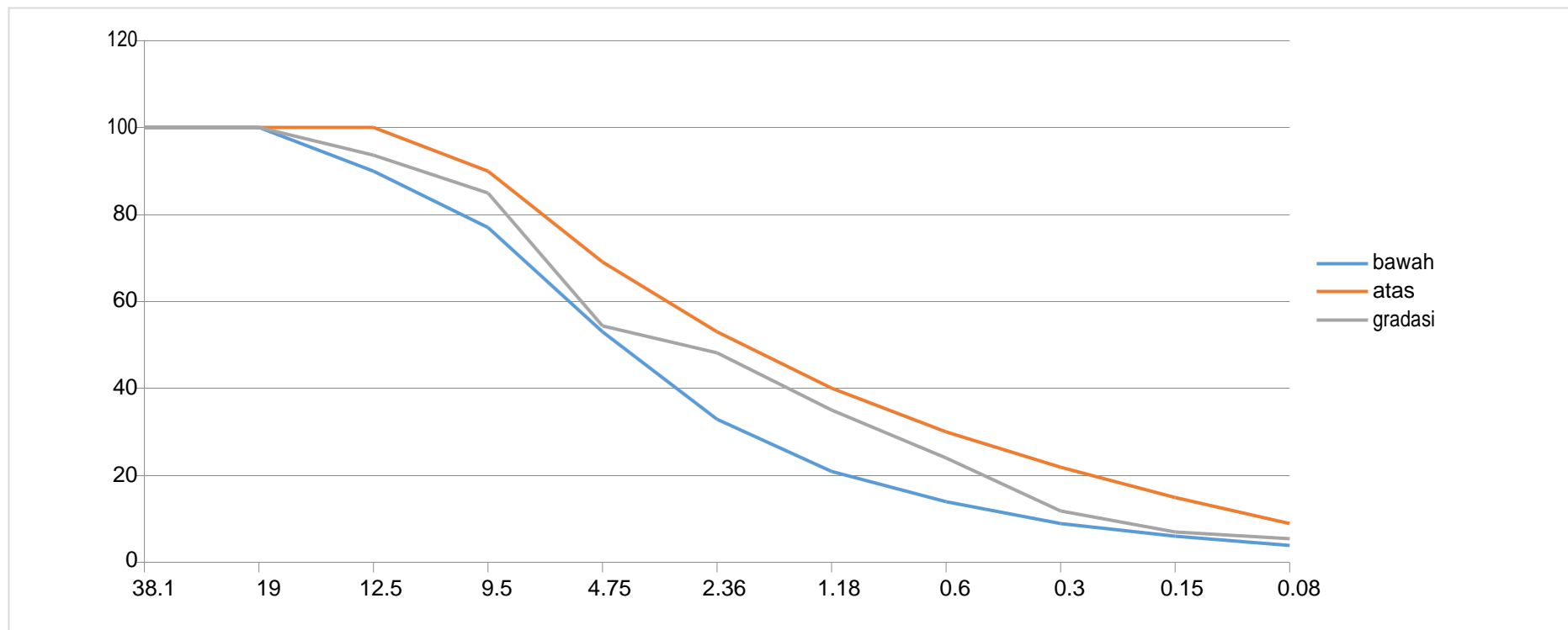
JENIS PENGUJIAN : TITIK LEMBEK ASPAL

TITIK LEMBEK ASPAL

| SUHU<br>(°C) | ASPAL<br>NORMAL |        | ASPAL + LATEKS<br>4% |        | ASPAL + LATEKS<br>6% |        | ASPAL + LATEKS<br>8% |        |
|--------------|-----------------|--------|----------------------|--------|----------------------|--------|----------------------|--------|
|              | I               | II     | I                    | II     | I                    | II     | I                    | II     |
| 5            | 0'0"            | 0'0"   | 0'0"                 | 0'0"   | 0'0"                 | 0'0"   | 0'0"                 | 0'0"   |
| 10           | 4'25"           | 4'25"  | 4'35"                | 4'35"  | 5'40"                | 5'40"  | 2'58"                | 2'58"  |
| 15           | 7'35"           | 7'35"  | 7'10"                | 7'10"  | 7'12"                | 7'12"  | 5'30"                | 5'30"  |
| 20           | 9'35"           | 9'35"  | 9'12"                | 9'12"  | 9'20"                | 9'20"  | 7'59"                | 7'59"  |
| 25           | 11'31"          | 11'31" | 10'50"               | 10'50" | 11'10"               | 11'10" | 2'29"                | 2'29"  |
| 30           | 13'45"          | 13'45" | 12'40"               | 12'40" | 12'50"               | 12'50" | 11'28"               | 11'28" |
| 35           | 16'10"          | 16'10" | 14'35"               | 14'35" | 14'35"               | 14'35" | 13'47"               | 13'47" |
| 40           | 18'15"          | 18'15" | 16'50"               | 16'50" | 16'40"               | 16'40" | 16'24"               | 16'24" |
| 45           | 20'10"          | 20'10" | 19'25"               | 19'25" | 19'42"               | 19'42" | 19'10"               | 19'10" |
| 50           |                 |        | 21'35"               | 21'35" | 22'07"               | 22'07" | 21'40"               | 21'40" |
| 55           |                 |        |                      |        | 24'30"               | 24'30" | 24'55"               | 24'55" |
| 60           |                 |        |                      |        |                      |        | 28'05                | 28'05  |

| PENGUJIAN         | NOMOR<br>PENGUJIAN | TEMPERATUR<br>SUHU | WAKTU  |
|-------------------|--------------------|--------------------|--------|
| ASPAL NORMAL      | I                  | 48                 | 23'50" |
|                   | II                 | 47                 | 22'20" |
| ASPAL + LATEKS 4% | I                  | 50                 | 21'50" |
|                   | II                 | 51                 | 21'59" |
| ASPAL + LATEKS 6% | I                  | 58                 | 26'30" |
|                   | II                 | 58                 | 26'25" |
| ASPAL + LATEKS 8% | I                  | 62                 | 29'22" |
|                   | II                 | 63                 | 29'45" |





**KOMPOSISI GRADASI GABUNGAN AGREGAT**

## A. Pengujian Analisa Saringan



### 1. Penimbangan Agregat



### 2. Agregat di oven hingga konstan



### 3. Agregat di masukan ke saringan dan di ayak 15 Menit dan timbang isi saringan setelah di ayak

## B. Pengujian Berat Jenis Agregat Halus



1. timbang agregat

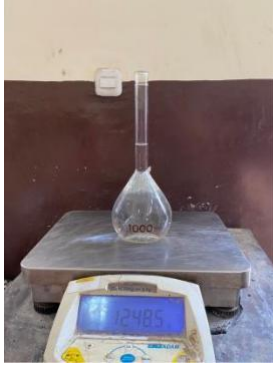


2. Agregat di oven hingga konstan



3. Masukkan kedalam sand conical mould dan tumbuk dengan 3x tahap penumbukan untuk mengetahui kondisi ssd





4. Timbang dan masukan air dan pasir ke dalam picknometer



5. Kocok hingga berbusa dan timbang



6. Buang air yg ada di piknometer ,ovent dan timbang berat keringnya

### C. Pengujian Berat Jenis Agregat kasar



1. Cuci Agregat dan diamkan agregat di dlm air



2. Ovent agregat



3. Timbang agregat



4. masukan kedalam piknometer , isi air dan

timbang D. Pengujian Berat Jenis Aspal



1. Timbang pikno kosong , pikno + air , pikno + aspal, pikno + air + asspal

## E. Penetrasi aspal



### 1. Siapkan aspal



### 2. Lakukan Pengujian

## F. Pengujian Daktilitas



1. Siapkan cetakan dan olesi menggunakan oli



2. Masukkan aspal ke cetakan



3. Masukkan kedalam bak perendam dan hitung waktu hingga aspal putus

## G. Titik Lembek Aspal



1. Siapkan alat



2. Masukkan air es dan letakan termometer di antara kedua cincin



3. Masukkan bola ke cincin yang sudah di isi aspal

4. Panaskan benda uji dan hitung waktu per kenaikan 5°C

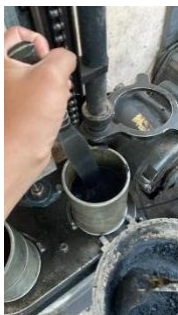
## H. Marshall



1. Timbang bahan dan oven



2. Siapkan kompor dan masak benda uji hingga tercampur rata



3. panaskan ring oleskan oli dan masukan benda uji yang sudah di masak

4. Tusuk tusuk menggunakan spatula





## I. Lateks

