

LAMPIRAN

Prosedur Pengujian BTEX

Analisis Senyawa BTEX dalam Tanah dengan *Headspace Gas Chromatography – Mass Spectrometry*.

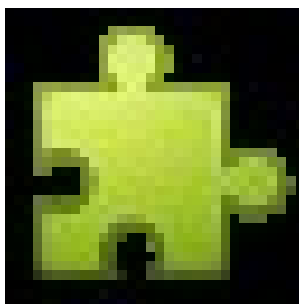
Berikut prosedur analisis senyawa BTEX dalam tanah menggunakan Headspace yang tersambung dengan GC – MS berdasarkan penelitian yang dilakukan Romero M, *et al.* (2016) :

1. Melakukan setting pada HS dan GC – MS.
2. Timbang 1 gram sampel tanah lalu masukan ke dalam botol vial 20 ml dan tambahkan 2 mL *Aquadest*.
3. Tutup botol vial tersebut dengan tutup botol vial bersepta hingga rapat.
4. Masukan botol vial kedalam HS *Sampler*.
5. Hitung konsentrasi BTEX yang terdapat dalam sampel tanah.

Data Hasil Wawancara

1. Jumlah Kepala Keluarga

| NO | LOKASI SPBU | JUMLAH KK | JUMLAH PENDUDUK |
|----|----------------|-----------|-----------------|
| | | | |
| 1 | A (MONJALI) | 32 KK | 109 |
| 2 | B (BESI JAKAL) | 16KK | 59 |
| 3 | C (KRANGGAN) | 24KK | 87 |
| 4 | D (TAMISIS) | 24KK | 84 |



2. Jenis Kelamin

| A (MONJALI) | | B (BESI JAKAL) | |
|-------------|-----------|----------------|-----------|
| PEREMPUAN | LAKI-LAKI | PEREMPUAN | LAKI-LAKI |
| 56 | 59 | 29 | 30 |

C

(KRANGGAN)

| D (TAMSIS) | | | |
|------------|-----------|-----------|-----------|
| PEREMPUAN | LAKI-LAKI | PEREMPUAN | LAKI-LAKI |
| 47 | 40 | 44 | 40 |

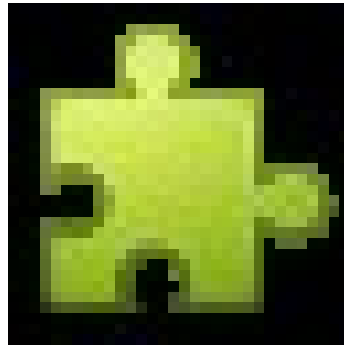
3. Kategori Umur

DEPKES RI TAHUN 2009

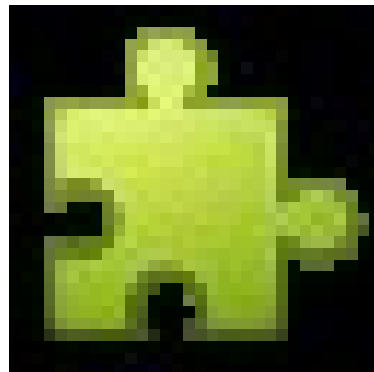
| KATEGORI | UMUR |
|--------------|-------------|
| BALITA | 0-5 TAHUN |
| ANAK-ANAK | 5-11 TAHUN |
| REMAJA AWAL | 12-16 TAHUN |
| REMAJA AKHIR | 17-25 TAHUN |
| DEWASA AWAL | 26-35 TAHUN |
| DEWASA AKHIR | 36-45 TAHUN |
| LANSIA AWAL | 46-55 TAHUN |
| LANSIA AKHIR | 56-65 TAHUN |
| MANULA | 65-LEBIH |

A (MONJALI)

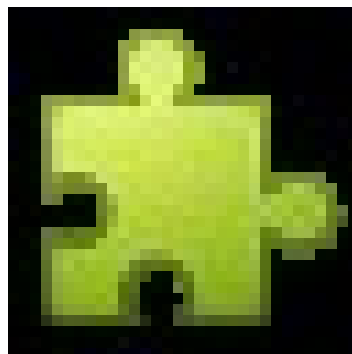
| BALITA | ANAK- | REMAJA | DEWASA | LANSIA | MANULA |
|--------|-------|--------|--------|--------|--------|
| 6 | 10 | 19 | 45 | 22 | 7 |

**B (BESI JAKAL)**

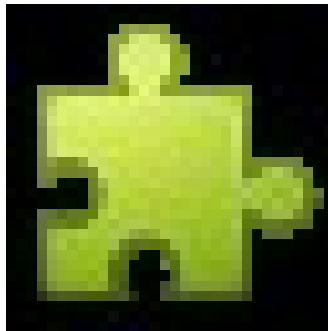
| BALITA | ANAK- | REMAJA | DEWASA | LANSIA | MANULA |
|--------|-------|--------|--------|--------|--------|
| 5 | 9 | 18 | 20 | 9 | 5 |

**C (KRANGGAN)**

| BALITA | ANAK- | REMAJA | DEWASA | LANSIA | MANULA |
|--------|-------|--------|--------|--------|--------|
| 11 | 13 | 17 | 36 | 8 | 2 |

**D(TAMISIS)**

| BALITA (0-5) | ANAK- ANAK (6-12) | REMAJA (13-20) | DEWASA (21-65) | LANSIA (66-75) | MANUL (76-95) |
|-----------------|----------------------|-------------------|-------------------|-------------------|------------------|
| 8 | 7 | 20 | 31 | 12 | 6 |



4. Pengetahuan Bahaya BTEX Terhadap Kesehatan dan Lingkungan

| A (MONJALI) | | |
|--------------|-----------------|---------------|
| | TAHU | TIDAK |
| C (KRANGGAN) | | |
| YA,TAHU | TAHU SEDIKIT | TIDAK TAHU |
| 2 KK | 10 KK | 12 KK |

| B (BESI JAKAL) | | |
|----------------|-----------------|---------------|
| | TAHU SEDIKIT | TIDAK TAHU |
| YA,TAHU | 4 KK | 11 KK |
| 1 KK | | |

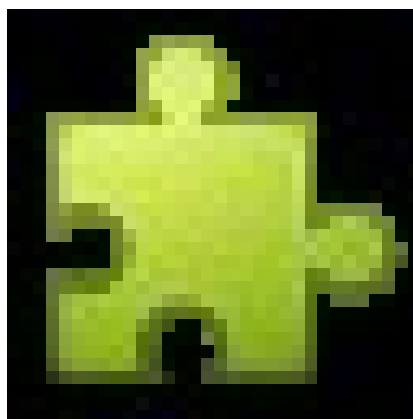
5. Jalur Paparan BTEX Pada Setiap KK

JALUR PAJANAN BTEX

| | A (MONJALI) | B (BESI JAKAL) | C (KRANGGAN) | D (TAMSI) |
|----------------------------|-------------|-------------------|--------------|-----------|
| DERMAL | 5 KK | 2 KK | 6 KK | 5 KK |
| ORAL | 8 KK | 6 KK | 2 KK | 6 KK |
| DERMAL DAN ORAL | 19 KK | 8 KK | 16 KK | 13 KK |

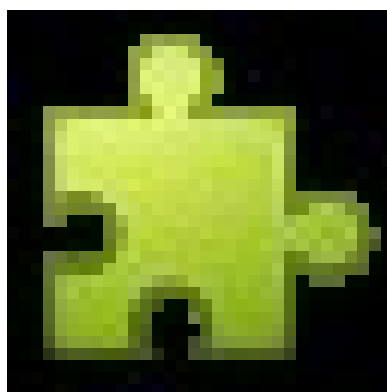
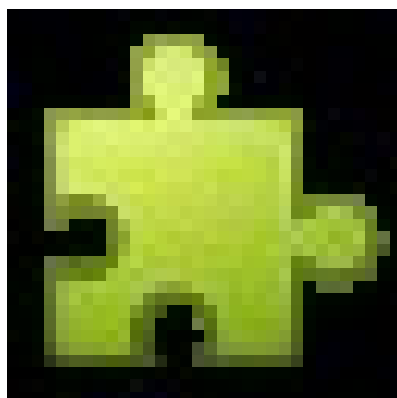
JALUR PAJANAN BTEX SECARA DERMAL

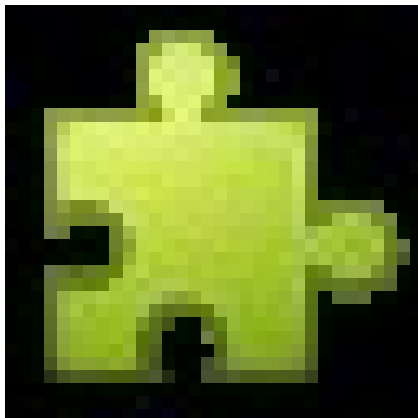
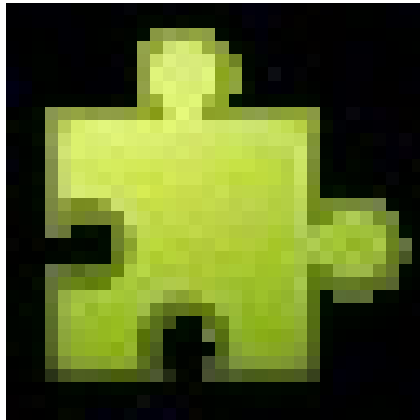
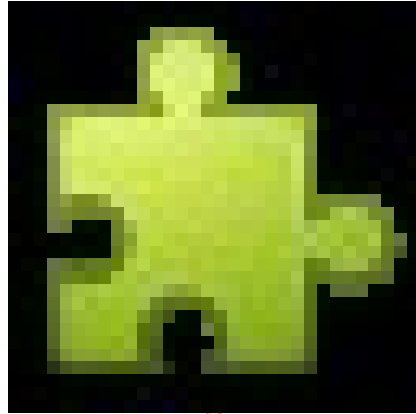
| | A(MONJALI) | B (BESI JAKAL) | C(KRANGGAN) | D(TAMSI) |
|--------------------------------------------|------------|-------------------|-----------------|---------------|
| BERCOCOK TANAM & MANDI | 5 KK | 2 KK | 4 KK | 8 KK |
| BERMAIN TANAH & MANDI | 7 KK | D (TAMSIS) | | |
| | | YA,TAHU | TAHU SEDIKIT | TIDAK TAHU |
| BERCOCOK TANAM,BERMAIN TANAH & MANDI | 12 KK | 5 KK | 1 KK | 18 KK |

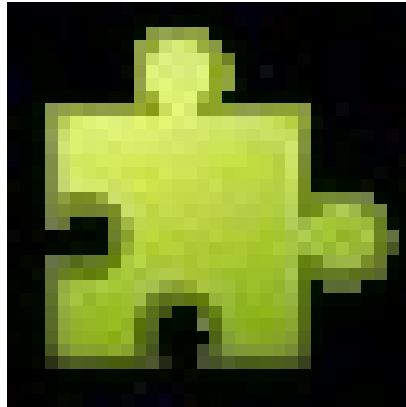


Perhitungan Data Menggunakan GC-MS

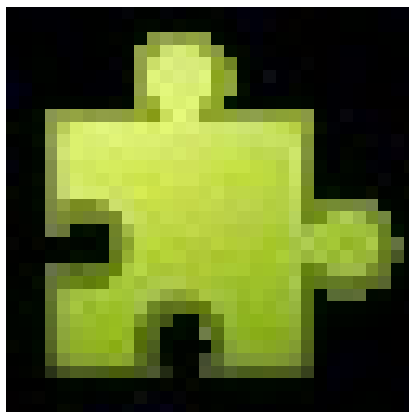
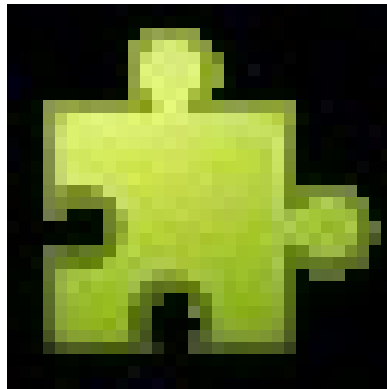
Kurva Kalibrasi Standar BTEX

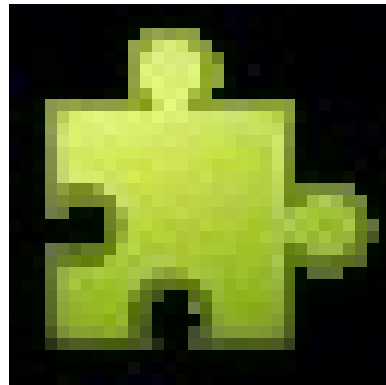
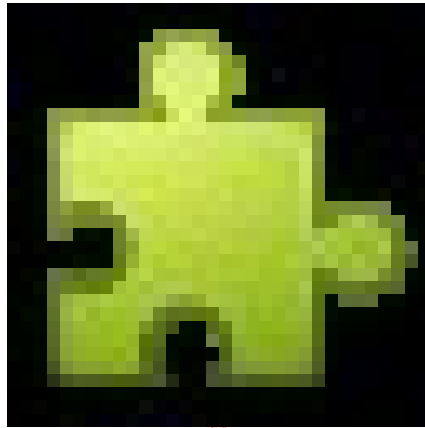
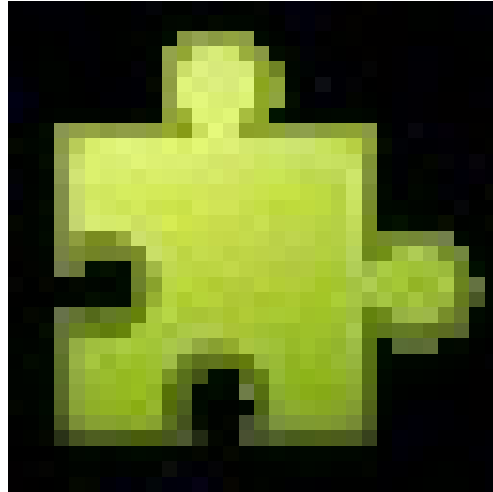


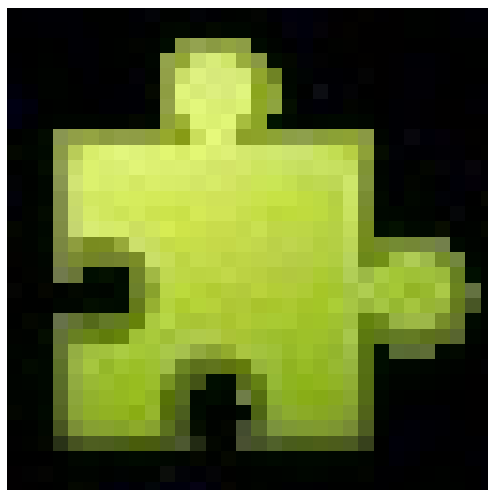




Kurva Kalibrasi Standar BTEX dengan Peak Area Baru







Perhitungan % Air Sampel Tanah

| | KEDALAMAN (m) | BERAT CAWAN KOSONG (gr) | BERAT CAWAN + TANAH (gr) | BERAT CAWAN+TANAH SETELAH DIPANASKAN (gr) | % AIR |
|-----------------------------------|------------------|----------------------------------|-----------------------------------|----------------------------------------------------|-------------|
| SPBU A (MONJALI) | 0,5 | 56,94 | 68,24 | 66,21 | 8,203539823 |
| | 1 | 54,51 | 64,63 | 63,48 | 8,863636364 |
| | 1,5 | 58,86 | 68,66 | 67,02 | 8,326530612 |
| | 2 | 51,27 | 60,77 | 59,01 | 8,147368421 |
| | 2,5 | 62,46 | 71,58 | 70,14 | 8,421052632 |
| | 3 | 59,89 | 70,44 | 68,42 | 8,085308057 |
| | 3,5 | 56,03 | 66,18 | 64,56 | 8,403940887 |
| | 4 | 57,84 | 67,64 | 66,53 | 8,867346939 |
| | 4,5 | 61,23 | 72,34 | 71,11 | 8,892889289 |
| | 5 | 65,34 | 75,52 | 74,06 | 8,565815324 |
| PEMBANDING : MONJALI STERIL | 0,3 | 51,42 | 61,66 | 59,79 | 8,173828125 |
| SPBU B (JAKAL BESI) | 0,5 | 55,47 | 68,48 | 65,23 | 7,501921599 |
| | 1 | 56,58 | 66,66 | 64,15 | 7,509920635 |
| | 1,5 | 53,3 | 63,19 | 61,5 | 8,291203236 |
| | 2 | 54,47 | 64,58 | 63,02 | 8,456973294 |
| | 2,5 | 61,39 | 71,64 | 70,07 | 8,468292683 |
| | 3 | 57,22 | 67,18 | 66,11 | 8,925702811 |
| PEMBANDING : JAKAL BESI | 0,3 | 57,9 | 66,53 | 65,38 | 8,667439166 |

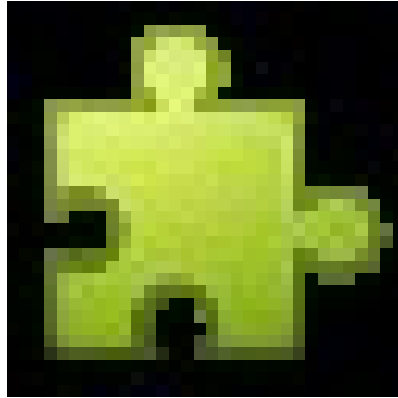
| | | | | | |
|---------------------------------------|-----|-------|-------|-------|-------------|
| STERIL | | | | | |
| SPBU C (KRANGGAN) | 0,5 | 55,27 | 64,39 | 63,21 | 8,706140351 |
| | 1 | 51,47 | 60,5 | 59,31 | 8,682170543 |
| | 1,5 | 64,7 | 73,85 | 72,66 | 8,699453552 |
| PEMBANDING : KRANGGAN STERIL | 0,3 | 54,55 | 63,41 | 62,22 | 8,656884876 |
| SPBU D (TAMAN SISWA) | 0,5 | 61,15 | 71,03 | 69,81 | 8,765182186 |
| | 1 | 59,9 | 69,55 | 68,54 | 8,953367876 |
| | 1,5 | 56,99 | 66,13 | 65,1 | 8,873085339 |
| PEMBANDING : TAMAN SISWA STERIL | 0,3 | 53,2 | 64,19 | 62,99 | 8,908098271 |

Perhitungan TOC Sampel Tanah

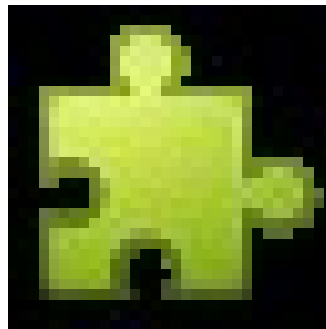
Tabel Pengukuran Absorbansi Larutan Standar Karbon

| KONSENTRASI (ppm) | Abs |
|----------------------|-------|
| 0 | 0 |
| 10 | 0,025 |
| 25 | 0,06 |
| 75 | 0,129 |
| 100 | 0,161 |
| 200 | 0,308 |

Kurva Kalibrasi Larutan Standar TOC



Hubungan Kedalaman Tanah dengan %TOC

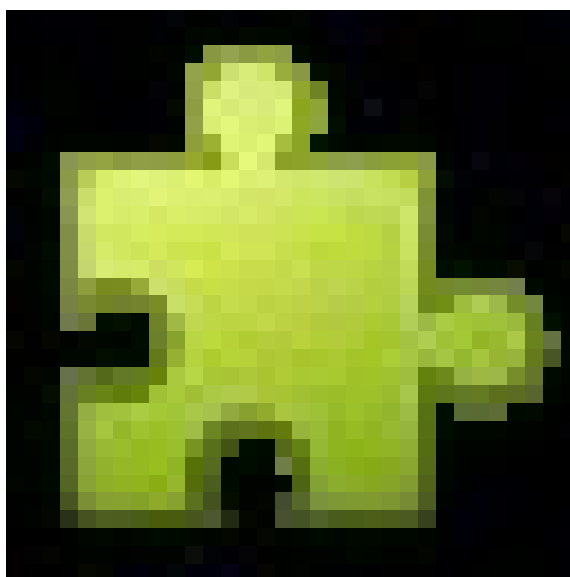


Tabel Perhitungan TOC Sampel Tanah

| Konsentrasi Kurva | ml ekstraks | mg sampel | %Air | %TOC Sampel |
|-------------------|-------------|-----------|-------|-------------|
| 2,727272727 | 10 | 50,11 | 8,20% | 0,500727273 |
| 2,181818182 | 10 | 50,07 | 8,86% | 0,397701818 |
| 1,454545455 | 10 | 51,1 | 8,32% | 0,266705455 |
| 1,363636364 | 10 | 50,35 | 8,14% | 0,250527273 |
| 1,727272727 | 10 | 50,25 | 8,42% | 0,316367273 |
| 0,818181818 | 10 | 50,33 | 8,08% | 0,150414545 |
| 1,545454545 | 10 | 50,17 | 8,40% | 0,283127273 |
| 0,272727273 | 10 | 50,09 | 8,86% | 0,049712727 |
| 0,909090909 | 10 | 50,08 | 8,89% | 0,165654545 |
| 0,727272727 | 10 | 50,44 | 8,56% | 0,133003636 |
| 1,909090909 | 10 | 50,45 | 7,50% | 0,353181818 |

| | | | | |
|-------------|----|-------|-------|-------------|
| 1,090909091 | 10 | 50,14 | 7,50% | 0,201818182 |
| 0,545454545 | 10 | 50,25 | 8,29% | 0,100047273 |
| 0,818181818 | 10 | 50,21 | 8,45% | 0,149809091 |
| 0,363636364 | 10 | 50,45 | 8,46% | 0,066574545 |
| 1,181818182 | 10 | 50,17 | 8,92% | 0,21528 |
| 2,090909091 | 10 | 50,23 | 8,70% | 0,3818 |
| 0,909090909 | 10 | 50,16 | 8,68% | 0,166036364 |
| 2,181818182 | 10 | 50,34 | 8,69% | 0,398443636 |
| 4,545454545 | 10 | 50,05 | 8,76% | 0,829454545 |
| 1,818181818 | 10 | 50,41 | 8,95% | 0,331090909 |
| 0,545454545 | 10 | 50,02 | 8,87% | 0,099414545 |

| Kedalaman Tanah | %TOC |
|-----------------|------------|
| 0,5 | 0,51629091 |
| 1 | 0,27416182 |
| 1,5 | 0,19129909 |
| 2 | 0,20016818 |
| 2,5 | 0,19147091 |
| 3 | 0,18284727 |
| 3,5 | 0,28312727 |
| 4 | 0,04971273 |
| 4,5 | 0,16565455 |
| 5 | 0,13300364 |



Nilai Koefisien Distribusi Setiap Sampel

| Kedalaman Sampel(m) | KD Benzene | KD Toluena | KD Ethylbenzena | KD p-Xilen | KD o-Xilen | KD m-Xilen |
|---------------------------|-------------|-------------|-----------------|-------------|-------------|-------------|
| A(Monjali) 0,5 | 0,004945683 | 0,004268199 | 0,004980233 | 0,004975226 | 0,0049572 | 0,004908129 |
| 1 | 0,003928101 | 0,00339001 | 0,003955542 | 0,003951565 | 0,003937248 | 0,003898273 |
| 1,5 | 0,00263425 | 0,002273397 | 0,002652652 | 0,002649985 | 0,002640384 | 0,002614247 |
| 2 | 0,002474458 | 0,002135494 | 0,002491744 | 0,002489239 | 0,00248022 | 0,002455668 |
| 2,5 | 0,00312476 | 0,002696715 | 0,003146589 | 0,003143425 | 0,003132036 | 0,003101032 |
| 3 | 0,001485644 | 0,001282134 | 0,001496023 | 0,001494519 | 0,001489104 | 0,001474363 |
| 3,5 | 0,002796448 | 0,002413377 | 0,002815984 | 0,002813153 | 0,00280296 | 0,002775214 |
| 4 | 0,000491013 | 0,000423751 | 0,000494443 | 0,000493946 | 0,000492156 | 0,000487284 |
| 4,5 | 0,00163617 | 0,001412039 | 0,0016476 | 0,001645944 | 0,00163998 | 0,001623746 |
| 5 | 0,001313677 | 0,001133723 | 0,001322854 | 0,001321524 | 0,001316736 | 0,001303702 |
| B(Besi Jakal) 0,5 | 0,003488377 | 0,003010522 | 0,003512746 | 0,003509215 | 0,0034965 | 0,003461888 |
| 1 | 0,001993358 | 0,001720298 | 0,002007284 | 0,002005265 | 0,001998 | 0,001978222 |
| 1,5 | 0,000988167 | 0,000852803 | 0,00099507 | 0,00099407 | 0,000990468 | 0,000980663 |
| 2 | 0,001479664 | 0,001276973 | 0,001490001 | 0,001488503 | 0,00148311 | 0,001468429 |
| 2,5 | 0,000657557 | 0,000567481 | 0,00066215 | 0,000661485 | 0,000659088 | 0,000652564 |
| 3 | 0,002126321 | 0,001835047 | 0,002141175 | 0,002139022 | 0,002131272 | 0,002110175 |
| C(Kranggan) 0,5 | 0,003771039 | 0,003254463 | 0,003797383 | 0,003793565 | 0,00377982 | 0,003742404 |
| 1 | 0,001639941 | 0,001415294 | 0,001651398 | 0,001649737 | 0,00164376 | 0,001627488 |
| 1,5 | 0,003935428 | 0,003396334 | 0,00396292 | 0,003958936 | 0,003944592 | 0,003905545 |
| D(Taman Siswa) 0,5 | 0,008192523 | 0,007070271 | 0,008249755 | 0,00824146 | 0,0082116 | 0,008130313 |
| 1 | 0,003270185 | 0,002822219 | 0,00329303 | 0,003289719 | 0,0032778 | 0,003245353 |
| 1,5 | 0,000981917 | 0,00084741 | 0,000988777 | 0,000987783 | 0,000984204 | 0,000974461 |

Grafik Hubungan antara Kedalaman Sampel dengan Kd

