MODEL KUAT TEKAN PROPORSI ABU TERBANG DAN SEMEN UNTUK BAHAN DASAR BATU CETAK

Moch. Husni Dermawan

[illegible]

[illegible]

***Abstract** Fly ash hasn't been used maximally and it can polute environment if it is not well treated. Because of it's pozolamic characteristic, fly ash can be used as a filler and banding agent for bricks. Object of his research is bricks from fly ash and cement. Bricks sample has dimension 7 cm x 7cm x 7 cm with 10% - 90% fly ash composition, sampling methods with compression test in each laboratory composition of 5 samples material. Average of sampling in each concentrate used for data analysis. Research result shows compression test for concentrate 10% AT + 90% PC = 409,05 kg/cm^2; 20% AT + 80% PC = 304,94 kg/cm^2; 30% AT + 70% PC = 243,99 kg/cm^2; 40% AT + 60% PC = 104,62 kg/cm^2; 50 AT + 50% PC = 84,23 kg/cm^2; 60% AT + 40% PC = 73,5 kg/cm^2, 70% At + 30% PC = 34,68 kg/cm^2; 80% At + 20% PC = 24,46 kg/cm^2; 90% At + 10% PC = 18,48 kg/cm^2. Conclusion for the result of compression strength test above average for floor (> 200 kg/cm^2), and for as compression 40% - 80% has compression value above average for wall (> 25 kg/cm^2).*

***Keywords:** compression strength, fly ash, bricks.*

Abstrak [illegible] *(fly ash)* [illegible] *(fly ash)* [illegible]

Kata kunci : [illegible]

PENDAHULUAN

[illegible]

[illegible]

TINJAUAN PUSTAKA

Bahan Baku Batu Cetak Tanpa Pasir

4k mn TfnSFF(ninThin T4SynaSn Tsz4riTjn mT fks(rUrTnmra8T

b4nIr T Ik kTk,nan T fnyn HInyn T Ik jrar TfnUrTokUniTUn InTnaSTn4n,nyTakfnmnST fksSrUAT

Semen Portland (PC)

Rk rsrUTEpLLT22: 6HxA GHpk(k TIzsUh 4T n4n,nyTak(k TyS4sz,SaTjn mT4SynaSn T4k mn T onsnT(k mSSmTyn,raTi,SiksFTjn mTUksrUn(nT4nsST aSSnUTin,aS(Tjn mTfksaSnUTyS4sz,SaT4n TmSaT akfnmnSTfnyn Tk(fn Ur8T

wn,n(TIk(frnUn TfnUrTokUniFTak(k T IzsUh 4T(ksrInin Tfnyn TrUn(nTfks,r maST akfnmnSTfnyn TIk mSnUTjn mT(k Th4Sn TfnUrT okUniTokInU(k mksna8T

Dnyn T 4nansT 4nsST ak(k T n4n,nyT on(Irsn Tn UnsnTfnUrTnIrsT4n TUn nyT,SnUTjn mT Iksfn 4Smn jnTak,n,rT4SUk,SSF4nSn,SanTUks,kfSyT 4nyr,rT 4n T ik(r4Sn T fnsrT 4Sn(Irsin T (k Th4ST anUrT 4n,n(T arnUrT Iksfn 4Smn T UksUk UrFTakySmmnTynaS jnT(k(k rySTajnsnUT akfnmnS n nTjn mT4Skyk 4niSST

Ck n(fnyn TnSTIn4nT(Sksn,TSSTnin T (k mynaSn TarnUrTInaUnTjn mT(k(Ir jnST ikirnUn TakIksUSTfnUrTfSnTUk,nyT(k mksSmT EDkUz TDksUr,n mFT..2AT.GSTpk(k T4SnUnin T Uk,nyT (k(n4nUT nInfSnT Uk,nyT (k onInST ikinirn Tjn mTorirIT r UiT(k(Sr,TarnUrT fkfn Tjn mT4SksSn FTakUk,nyTS T SnTnin T fkslszakaTUksraT4n,n(Th minTOniUrTjn mT,n(nT ySmmnT(k mksnaFTjnSUTr UiT(k 4nInUn T ikinirn Tjn mT,kfSyTfkans8T

Abu Terbang

bfrTUksfn mT(ksrInin TfnmSn TUksfkansT 4nsSTnfrTjn mT4SynaSn T4nsSTIk(fninsn TfnUrT fnsn8TbfrTUksakfrUT4Sn(fSTakonsnT(kin SST 4k mn TaSaUk(TIk mk 4nIn Tk,kiUszaUnUSTbfrT Uksfn mT(k(SSSTrirsn TfrUSTjn mTyn,raT4n T (k(SSST Ons nTjn mT,kfSyT Uksn mT EiknfrH nfrn GSTDrUSn TnfrTUksfn mTfksNhsSnaST4n,n(T rirsn T4n TaUsriUrsTjn mT4S SSS jn8TpkonsnT r(r(Trirsn TfrUSTnfrTUksfn mTfkiSansTn UnsnT 2F.Tan(InST922TI(TE(Ssz GSTpk4n min T4nsST aUsriUrsT ynaST n n,SanT *Scanning Elektron Microscope* Ep) RGSTDrUSn TnfrTUksfn mTUksfnmST 4n,n(TS nTfnmSn TAT

:8TDrUSn TfkansT4k mn Tfk UriTUniTfksnUrsn 8T DrUSn TSSTfn jniTUks4nInUTn4nTcsniaST,kfSyT fkansT4nsSTxKTI(FT

98TDrUSn Tfr 4nsTjn mTfks,zfn mFTjn mTaksSmT 4SakfrUT *cenospheres.* DrUSn TSSTUks4nInUT In4nTcsniaST92HxKTI(T4n TfksnUTk Sa jnT irsn mT4nsST Tm,o([6]FT

68TDrUSn Tfr 4nsTjn mTUniTfks,rfn mTEaz,S4GST eks4nInUTn4nTcsniaST2TI(TnUnrT,kfSyTkoSFT

K8TDrUSn Tfr 4nsTfks,rfn mT4k mn TakT(,nyT frUSn T az,S4T EDH22GTjn mT UksIksn minIT 4S4n,n(jn8T DrUSn T jn mT UksIksn minIT UksakfrUTaksSmT4Sn(nin Tp*lerospheres,*

08Tbm,z(ksnUT4nsSTfrUSn HIrUSn TikoSTE2TI(GT jn mT(k(fk UriTfrUSn TfkansTjn mTUniT fksnUrsn 8TDn jniTUks4nInUTn4nTcsniaST,kfSyT fkansT4nsSTxKTI(8T

WS fnyTfnUrTfnsnT(k(Ir jnSTr arsH r arsTjn mTan(nT4k mn Tak(TakySmmnT ,S fnyT fnUrT fnsnT 4S r miSin T 4nInUT 4Snr nin Takfnmn STfnyn TyS4sz,S8Tenfk,T:8T (k n(ISn TynaSTn n,SaSTiS SnTnfrTUksfn mT fnUrTfnsnTjn mT4S4nInUT4nsSTfksfnmnSTUn(fn mT 4SL 4z kaSn8T

Tabel 1. T5z(IzaSnaSaSbfrTeksfn mL 4z kaSnT

5z(IzaSaST S SnT	ban,TDnUrTDnsnT

	bSTT ,nNhT	CsS nT =zn,T	pnUST	CSn mT =zn,T	en SzT	DksknrT	Rr,UT DsnT 4T	b4nszT Y nsnT	CWevT prsn,njn
pSSnTEpS 9GT	0. 8KT	0982T	0: 82T	K: 8 T	6080T	6981T	628KT	9182T	0>86T
b,rS SS(TEb,9" 6GT	9K8KT	9082T	6>8>T	9982T	9082T	9: 8KT	9K8 T	: 982T	9. 86>T
DkaSTk9" 6GT	K8>T	: 98>T	K89T	082: T	080T	9282T	: 986T	: 182T	K8 9T
=n,oS(TE=n" GT	68 T	989T	: 8KT	181T	: 282T	180T	: : 80T	: >82T	68>: T
Rnm kaS(TERm" GT	: 8KT	989T	28KT	682T	>82T	68 T	98KT	: 982T	98 KT
pz4S(TEgn9" GT	980T	: 82T	286T	: 80T	: 82T	28 T	281T	281T	289T
CzUhaS(TE59" GT	280T	: 81T	286T	28 T	: 8>T	281T	28 T	280T	g8bT
eSh S(TEeS GT	281T	: 82T	68 T	28>T	: 8>T	281T	281T	286T	g8bT
Cyzal zsTEC9" 0GT	0.4	280T	8 T	280T	281T	28KT	: 82T	289T	g8bT
pr,c4nTEp" 6GT	g8bT	: 8>T	: 80T	>8>T	182T	. 82T	18KT	: 9T	282T
Rn mTER 6" GT	g8bT	g8bT	g8bT	g8bT	g8bT	g8bT	g8bT	g8bT	g8bT

Rk rsrUTaUh 4nsTbpeRT=T: 1H: TnfrT Ukfn mT ynaST Ik(fninsn T fnUT fnsnT 4Sz,z min T nUhaT 7k SaT fnUT fnsnT jn mT 4Sr nin Tr UiTIk(fninsn TUksakfrUSTb4nT 4rnT7k SaTnfrTUksfn mTjnShTAT

: 8T5k,naTt TATnfrTUksfn mTjn mT4SynaS n T4nsST Ik(fninsn TfnUTfnsnT7k SaTn UnaSTnUhrT fSh(SzraST

98T5k,naT=TATnfrTUksfn mTjn mT4SynaS n T4nsST Ik(fninsn TfnUTfnsnT7k SaT,Sn SUnUhrTarfT fSh(SzraT

prar n Ti$ SaT4n TaSnUTcSaSTnfrT Ukfn mT(k rsrUTbpeRT=T: 1TH: : T4nInUT4SynUT In4nTUhfk,T98T

Tabel 2. prar n T$ SaT4n TaSnUTcSaSTbfrTeksfn mT

vsnSh T	5k,naTt T	5k,naT=T
b8Tprar n T$ SaT		
: 8TpSSnT4Szi aS4nTPTn,r(SS(Tzi aS4nTPTkaSzi aS4nT(STT	x282T	0282T
98Tpr,rsTUSzi aS4nT(niaTT	082T	082T
68T5n4nsTnSsT(niaTT	682T	682T
K8T+Sn mT SnsT(niaTT	>82T	>82T
08Tgn9" T(nia-T	: 80T	: 80T
D8Tp SnUTcSaST		
: 8T5kyn,ran TaSnT4ShUhaTnjnin TK0T(T(niaTT	6K82T	6K82T
98TL4kiaTkniUSn Tzhz,n T4k mTC=T:TTn4nTr(rsT91TynsT(STT Tk(fn 4SmT	x082T	x082T
68TbST(niaTT Tk(fn 4SmT	: 2082T	: 2082T
K8TCk mk(fn m T4k m TbrUzHb,nNkT(niaTT	281T	281T

Ck mnsryTnfrTUksfn mTnInfSnT4SSS7hrT 4nsTrirsn jnTinsk nTaSnUjnTjn mTr ST4nsST nfrTUksfn mTfk UiTfrUST4n Tikyn,ran jnT Ik mmr nn TnfrTUksfn mT4nInUT(k(Iks(r4nyT Ik mks7hn TfnUTokUhi8TwS n nTn4rin TfnUT okUhiTjn mT4SynaS n Tnin T,kfSyT n4nUTakySmmnT ,kfSyTk4nI TnST

bfrTUksfn mT(k(Ir jnTaSnUTIzhz,n T jn mTfnST akySmmnT4nInUT(ksk 4nyin TIn naT yS4snaST 4nsT ak(k T akySmmnT (k(Iksi koST ik(r miSn TUks7h4SjnTskUhiTkUhiTIn4nTfnUT okUhiT niSnUT Ik jrarUh 8T wS n nT niUSUhaT Izhz,n T an mnUT 4Sk mnsryST z,kyT fkans jnT frUSn T(niSTyn,raTfrUSn TnfrTUksfn mT(niST USmmShiUSShaT jnT

bfrTUksfn mT(k(Ir jnTsknia STIzhz,n T jn mT,kfSyT,n(fnUT4nsTIn4nTIzhz,n Tn,n(ST 4S n nT Ik mmr nn jnT US4niT (k n(fnyT ikirnUh Takfk,r(Tr(rsT: 2TH: KTynsSTUkUhISnin T ,kfSyTjnUhTakUk,nyTr(rsT,kfSyT,n(nTT

Air

bSTr UiTfnUTokUhiTfksIksn TakfnmST Ik(fn UTIszakaTIk mSnUh TaksUhTIk mksnan T ak(k 8TCszakaTSSTnin Tfks,n mar mT4k m T f n$ Tf $ hTn$Tj n mT4$m nin Tn4n,nyTn$T(rs $T 4k mn Tl k mks$ TU$ni T(k mn 4r mTf nyn H f nyn Tj n mT4nl nU(k mmn mmr T szakaT4$ha8T

pkl ks$T yn, j nT l n4nT f kUz FT l n4nT l k(f rnUh Tf nUr Tok Uhi FTn$Tf ks,r ma$Tak f nmn$T (k4$Tr UriT(k mn4nin Tskni a$Tn UhsnTak(k T 4n Tnf r TUksf n mTak,n(nTl szakaTl k m$nUh T4n T l k mksnan Tf ks,n mar m8T

Cn4nT4nans j nTU$ni Tak(r nTn$Tn,n($T 4$nUhi n Tn$T(rs $FTak,n(nTn$T$rT(k mn 4r mT r arsH ars Tj n mTUks,nsr U8Tb$Tyr7n Toz Uzy j nFT (k(l r j nTU mi nUT i k(r s $ Tsk,nU$Ti nsk nT ik(r mi Sn T l n4nT annUT 7nUry FT n$T yr7n T Uksi z Uh(SnaS$T iz Uzsn HizUzsn T 4ns$T r4nsnFT 4k($$ T l r,nT 4k mn T n$T j n mT f ksn4nT 4$ks(rinn Tf r($$$TUksmn Ur mTl n4nTi z 4$T Uh nyTnUhrTf nUrn Tj n mTi k(r mi Sn Tf kans$T (k mn 4r mT f nyn Hl nyn T Uks,nsr UT akl ks$T k 4nl n Tl n4nUFTmmaTj n mTUks,nsr UFTmmsn(T4n T hnUHhnUzsmn $T,nS Tj n mT(r4nyT,nsr U8T

pkonsnTr(r(Tn$Tj n mT4nl nUT4$ Sr(FT f n$ Tn$Tj n mTUk,nyT4$,nyTl ksr anynn Tn$T(Sr(T (nrl r Tj n mTUh l nT4$,nyT4nl nUT4$ ni n$Tr UriT l k(f rnUh Tf nUr Tok Uhi 8Tbl nf $hT4$ ksmr nin Tn$T j n mT,nS FT(ni nTynsr aT(k(k ry$Tajnsn UHajnsnUT (k rsr UTaUh 4nsTj n mTf ks,nir 8TCn4nTl k k,$$ T S4m nin Tn$T4ns$Tar(rsTnsUkU$Tj n mTn4nT4$T tnir,UhaTeki $Tvgg) p8T

T

Kuat Tekan

²n mT 4$ ni ar4T 4k mn T irnUT Uki n T n4n,nyTi ki r nUh Tj n mT4$ ksz,kyT4ns$Tyna$Tf nm$T n UhsnTf kf n TUki n T4k nmn T,rnaTf $n mTUki n 8T w$S$Tl k k,$$T(k mmr nin Tf k 4nTr7$T4k mn T rirsn Txo(T%TxTo(T%TxTo(8TCk mr7$ TS$T 4$ hirin Tr UriT(k mkUhyr$T i ki r nUh Tf nUrT okUhi Tj n mT4$k,$$FTnl ni nyTf nUr Tok Uhi TUh l nT l na$Tj n mT4$r f aUaT4k mn Tnf r TUksf n mT l n4nT l ksozf nnn T $$ (k(k ry$T aUh 4nsT

i ki r nUh Tj n mT4$$in Tpg LTgz8T2KH. 1. H8T Ck mr7$ TS$T4$ hirin T4k mn T(k mmr in T (kaS Tr7$TUki n T*(Compressing Test Machine),* l n4nTr(rsT91Tyns$T

v UriT(k mn n,$nT4nUhTirnUT Uki n T j n mT4$ ksz,kyT4ns$Tf kf n Tj n mTf ki ks7nTl n4nT (kaS TUki n FT(ni nT4$m nin Tr(raTAT

$$Kuat\ Tekan = \frac{P}{A}\ kg/cm^2$$

w$ n nAT

CT/ Tf kf n Tj n mT4$ ks$n Tz,kyT(kaS TUki n T E5mGT

bT/ TWnaTl k n(l n mTj n mT(k ks$ nTf kf n T Eo(XGT

T

METODE PENELITIAN

Bahan dan Benda Uji Penelitian

Dnyn Tj n mT4$m nin TaksUhTf k 4nTr7$T j n mT4$rnUTn4nTl k k,$$ TSh4n,nyTAT

:8Tb$T

b$Tj n mT4$ nin$4n,n(Tl k k,$$ T$$Tf ksnan,T 4ns$S aUh,na$Tn$Tf ksa$T,nf zsnUz$(T7r sr an T eki $T p$ $FT t nir,UhaT eki $T v ksaha T gkmks$pk(nsn m8T

98Tpk(k T

Ck k,$$ T$$T(k mmr nin Tak(k Tl zs,h 4T 7k $T,4ns$T sz4ri a$ak(k gran UhsnT4n,n(T ik(nan Tf ksf k UriTin Uz mT4k mn Tf ksnUT K2T m8T

68Tbf r TUksf n mT

bf r T Uksf n mT j n mT 4$ nin$T n4n,nyT yna$T ,$ f nyTl k(f ninsn Tf nUr Tf nsnT4ns$T$ 4raU$T f n TCe8TRkmnTl r f f ksTt noUzsj Tpk(nsn mFT v $T Csz4ri a$T pn,nU$m84k mn T ikUk Urn T ,z,zaTnj ni n Tgz8Tx2T

K8TDk 4nTr7$T

v UriT(k mr7$TirnUTUki n Tf nUr Tok Uhi TUh l nT nmskmnUTl n4nTon(l rsn Tak(k T4n Tnf rT

Ukfn mFT4$rnUTfk 4nTr7ST4k mn TokUhin T
irfraTirsn Txo(T Txo(T Txo(8T

Alat

Cksn,nUh T jn mT 4Sr nin T 4n,n(T Ik k,$$ TS Sh UhsnT,nS AT

:8Tbjnin T
bjnin T4k mn T,rfn mTgz8T:22FTgz8T:02FT gz8T:x2Tjn mT4Sk minIST4k mn TUrUrIT4n T In FT4Sr nin Tr UiT(k mn(fST msn4naST nfrTUkfn m8Tb,nUTSST4Sk minIST4k mn Tn,nUT Ik mkUhsTn4nTannUTk mjnin 8T

98Te$fn mn T
v UiT(k $fn mTfnyn Tarar TIk(frnUh T n4rin TfnUTokUhiTUh InTnmskmnUTjn mT 4Sn(IrsTnfrTUkfn mT4k mn TikUk,$$T2F2:T ms8T

68Tdk,naTUhfr m,mk,naTirsT
dk,naT irsT 4Sr nin Tr UiT(k mirsT fn jni jnT nST jn mT 4Sr nin T 4n,n(T Ik(frnUh Tn4rin TfnUTokUhiTUh InTnmskmnUT jn mT4Sn(IrsT4k mn TnfrTUkfn m8T

K8TC$kUT
C$kUT4Sr nin Tr UiT(k(fn UTikUk,$$T rirsn TnST4n,n(Tmk,naTUhf,SmTjn mTnin T 4ninT

08T=nOn TfkansT
=nOn T fkansT 4Sr nin Tr UiT Uk(InUT n4rin TfnUTokUhiTUh InTnmskmnUTjn mT 4Sn(IrsTnfrTUkfn m8T

>8Tposnl T
posnl T 4Sr nin T r UiT (k(nariin ;(ksnUhin Tn4rin TfnUTokUhiT Uh InTnmskmnUTjn mT4Sn(IrsTnfrTUkfn mT ik4n,n(TokUhin 8T

x8Tb,nUTUkin ;U(friT
b,nUTU(friT4Sr nin Tr UiT(k r(friT n4rin TfnUTokUhiTUh InTnmskmnUTjn mT 4Sn(IrsTnfrTUkfn mTk4n,n(TokUhin 8T

18Tun minTazsz m,i,$ksT
un minT azsz m,i,$ksT 4Sr nin Tr UiT (k mirsTak(rnT4$ k aSTk 4nTr7ST

.8T5nsr mTmz ST
5nsr mTmz STjn mT4$nanySTnSFT4Sr nin T 4n,n(TIszakaTIksnOnUh Tn4rin TfnUTokUhiT Uh InTnmskmnUTjn mT4Sn(IrsTnfrTUkfn mT

:28TRkaSTUkin T
RkaSTUkin T4Sr nin Tr UiT(k mkUhyrST irnUTfnUTokUhiTUh InTnmskmnUTjn mT4Sn(IrsT nfrTUkfn mT

::8TFkUhin TfnUTokUhiT
=kUhin T fnUT okUhiT jn mT 4Sr nin T fksfk UiTirfraT4k mn Tirsn Txo(T%Txo(T %Txo(FTr UiT(k okUhiTn4rin TfnUTokUhiT (k 7n4STk 4nTr7STjn mT4Sk,$$TT

T

Pelaksanaan Penelitian

Ck k,$$ T4Shirin T4n,n(TfkfksnInT UhynITakIksUSTksrUST

:8TenynITCk(ks$ann TDnyn T
Ck(ks$ann Tfnyn T(k,$rUSTak(rnTfnyn T Ik jrar TfnUTokUhiTUh InTnmskmnUTjn mT 4Shirin Tn4n,nyTIk(ks$ann Tin4nsTnfrT Ukfn m8T Vh minyHh minyT Ik(ks$ann T in4nsTnfrTUkfn mTn4n,nyTakfnmSTks$rUAT n8TCk kUhIn Tn4nsTpS 9T
f8TCk kUhIn TfksnUTk SaT
T

98TenynITCk(frnUh TDk 4nTv7ST
Cn4nTIsSa$ jnTIszakaTIk(frnUh T fk 4nTr7STEn4rin TfnUTokUhiTUh InTnmskmnUT jn mT4Sn(IrsTnfrTUkfn mTGan(nT4k mn T Ik(frnUh T fnUT okUhiT In4nTr(r(jnFT fnyn HTnyn T 4Sn(IrsT ik(r4S T 4$ nariin T ikT 4n,n(T okUhin T 4n T 4$n4nUn 8Tpkfk,r(TnfrTUkfn mT4Sn(IrsT 4k mn Tak(k TIn4nTn4rin TfnUTokUhiT

Uh l nTl naST4Shjni TUks,kf SyT4nyr,rT4k mn T ikUk Uh n T,z,zaTansSmn T z8 x28T

n8TCk on(l rsn TDnyn TDnirT

CszakaT l k on(l rsn T fnyn T fnirT 4Shirin T4k mn Tn,nUTl k mn4ri TakonsnT (n rn,T4k mn Tn,nUTl k mn4ri TokUzi T4n T onOn Tf kans8TCn4nTl szakaTl k on(l rsn T fnyn T fnirFT fn jni jnT nST jn mT 4Snr nin T 4n,n(T l k on(l rsn T l ks,rT l ksynUSh TyrararaFTinsk nTNz,r(kTnSTjn mT 4Snr nin Tan mnUT(k(l k mnsrySTl szakaT l k mks7nn Tl k okUhin Tf k 4nTr78TT

T

f8TCk okUhin ;l k(n4nUh T

Cn4nTr(r(jnTl k okUhin Tl nNSmTf,zoi T 4nl nUT4Shirin T4k mn TonsnT(kin SFT ak(ST (kin ST nUhrT akonsnT (n rn,T 4k mn TokUhi TUh mn 8TCn4nTl k k,SSh TSSFT l k okUhin T4S,rin TakonsnT(n rn,8T

T

o8TCk(k,Synsnn T,l ksnOnUh T

bmnsT4Sksz,kyTi kirnUh Tf nyn TokUhin T jn mTf nSFTl ks,rT4ShmnTnmnsTUSni TUks7h4ST l k mrnl n T in4nsT nST jn mT akonsnT fks,kf Syn Tl n4nTynsSynsT nOn,TakUk,nyT 4Shirin T l k okUhin 8T v Ui T (k 7hmnT nmnsT USni T Uks7h4ST l k mrnl n T jn mT fks,kf Syn T l ks,rT 4Shirin T US4nin T l ksnOnUh 8T CksnOnUh T nOn,T 4Shirin T 4k mnTonsnT(k j Sl n Tf k 4nTr78Tl n4nT Uk(l nUT jn mT Uks,S4r mT nUhrT 4Sh mSH n mSin Tak,n(nT9KT7n(TakUk,nyTak,kanST l k okUhin 8T Ck(k,Synsnn T ,n 7Uh T 4Shirin T 4k mn T (ksk 4n(T nUhrT (k jSn(T f k 4nT r78T akonsnT l ksS4ST ak,n(nT xTynsST 4k mn T onsnT(k rUl T 4k mn Tnsr mTz STk(fnf8T

HASIL DAN PEMBAHASAN

Hasil pemeriksaan bahan

+naST l k(ksSann T nST akonsnT NSrn,T Uks,SynUT f nyOnT nST jn mT 4Snr nin T akf nmnST on(l rsn Tf kansT4nsST,nf zsnUzsS(TDCL5T4ksSaT i SUhsrTpk(nsn mT4k n Tz 4SaSTUSni Tf ksOns nT 4n TUSni Tf ksf nr8T

+naSTl k(ksSann Tak(k TakonsnTNSrn,T Uks,SynUTak(k Tjn mT4Snr nin T4n,n(Ti kn4nn T fnSTf rUSn jnTyn,raFTUSni TUks4nl nUTmr(l n,n H mr(l n,n FTi k(nan TUSni Tsr ani T4n TUks,SynUT (naSyTf nsr8T

bf rT Uksf n mT 4Sksz,kyT 4nsST ynaST l k(f ninsn TfnUf nsnT4n,n(Tl szakaTl sz4ri aST S4raUST fn T CeT RkmnT l rff ksT t noUzsj T pk(nsn m8Tbf rTUksf n mTSST(ksrl nin TynaST l k(f ninsn TfnUf nsnTarff SU(SzraTl sz4ri aST CeTb4zsnT5n,S n Uh T4k mn T,k(l ksnUrsThz nT l k(f ninsn Tn UhsnT902VTHT622V=8TCk mr7Sh T insni UksSaUST nfrT Uksf n mT 4Shirin T 4ST ,nf zsnUzsS(T l k mr7Sh T DCCLT pk(nsn mT Eur n4ksSFT922: GTakf nmnSTf ksSrUT

Tabel 3.T5n 4r mn Tf iaS4nTbf rTeksf n mT

prar n T5S SnT	DksnUE GT
pS 9T	>6F2: T
b,9" 6T	. F9xT
t k9" 6T	>F6: T
=n" T	0F. T
Rm" T	2F20T
+Sh mT ShsT	: 0F60T
DksnUTk SaT	2F11T

T

Dks4nansin T arar n T fnyn T i S SnT UksakfrUT(k r 7iin TfnyOnTnfrTUksf n mTaSnT l k(f ninsn T4STCeTRkmnTl rff ksTt noUzsj Tjn mT l n,SmTf kansTn4n,nyTpS 9T4n Tb,9" 68Tur(,nyT iz(l z k TEpS 9T PT bL9" 6T PT t k9" 6GTar4nyT (k(k rySTajnsnUT(rUTl rhz,n T(k rsrUTbpeRT >: 1H >TakfnmnST(Sksn,FTn4(SUrskTEb z S FT : . . 0GFTjnSUT,kf SyT4nsST 2- 8FHn,TSST(k r 7iin T fnyOnTnfrTUksf n mTCeTRkmnTl rff ksTt noUzsj T (k mn 4r mT=Tjn mTorirl Tf kans8Tbi SnUTi n4nsT =TUSmnSTnin T(k mrsn mSTskni USNShaTnfrT4n T ak,n 7UjnThin T(k mrsn mSTrnUUkin 8T u$nT4$n 4Smin T4k mn Tr arsTr arsT jn mTn4nTIn4nTak(k T(ninTUks4nInUTak,SaSyT 4n,n(Tin4ns jnFT,kf SyT7k,na jnT4nInUT4SSynUT 4n,n(TUhf k,T4ST nOnyTS SAT

Tabel 4. Cksf n 4Smn T$ fnyTfnUfnsnT4n Tak(k T

prar n T 5$ SaT	W$ fnyT DnUfnsnTE G	pk(k TE G	pk,SaSyT
pS 9T	>6F2: T	92TF9>T	6xF2: T
b,9" 6T	. F9xT	0TF. T	2F9xT
t k9" 6T	>F6: T	: TH0T	: F6: T
=n" T	0F. . T	01TF>0T	-
Rm" T	2F20T	: THKT	-
+Sn mT ShsT	: 0F60T	2F0THKT	: F60T
DksnUT7k SaT	2F11T	T	T

wnsSTynaSTI k mr7Sn TnfrTUksfn mTynaST ,$ fnyTI k(fninsn TfnUfnsnTI sz4riaSTfn TCeT RkmnTI rffksTt noUzsjTpk(nsn mT(k(I r jnST ik(r miSn T r UiT 4$ n onnUn T akfnmnST fnyn T4nansTI k mk(fn mn TfnUTokUhiTinsk nT pS 9T4n,n(Tin4nsTUSmnnST jnSUT >6F2: - T4n T n,r(SnTb,9" 6T4n,n(Tin4nsTsk 4nyTjnSUT. F9x- T akySmnnT(k mynaS n TSnUh T,n(fnUT4k mn T ikirnUh TUSmnST

+naST skniaST in,a$(T aSSnUT yS4snUT 4k mn Tf ksUh(fny jnTOniUTskniaSTakonsnT fksn marsHh marsT(k(fk UiTIn4nUh Tjn mT UksraTfksUh(fnyTikiksnan jnTan(I nSTOniUT UksUk U 8T

DkaST ziaS4nT Ek9" 6GT jn mT(k(fksST Ons nThfrHhfrT4n,n(Tin4nsTsk 4nyTjnSUT>F6: - T 4$ n nTfkaSTziaS4nT(k(I r jnSTI ksn TakIksUST n,r(SnFTak4n mT(nm kaS(TERm" G(k(I r jnST in4nsTsk 4nyTjnSUT2F20- Trsn mT4nsSK- 8T

Dnyn Tarar TfnUTokUhiTUh I nTInaSST jn mT4Sn(I rsT4k mn TnfrTUksfn mT(k,$ rUST ak(k Tk SaTpk(k TCzsUh 4TEp CG7k SaT. T(kskiT gran UhsnT4n,n(Tik(nan Tfksfk UiTin Uz mT fksnUTK2TimFTnfrTUksfn mTjn mT4Sn(f ST4nsSTynaST I k(fninsn TfnUfnsnTS4raUSTfn TCeTRkmnT I rffksTt noUzsj8Tb SSTjn mT4Snr nin T4Sn(f ST4nsST ,nfzsnUzsS(Tfnyn Tt nir,UhaTeki STv gg) p8T

+naSTn4rin TfnUTokUhiTUh I nTInaSST akUk,nyT 91T ynsST 4$ r,nST 4nsST I szak UhakT I k(ninSn TnfrTUksfn mT Uksfn jn T akfnmnST fksSrUAT

Tabel 5. Dk 4nTr7STnUTokUhiTr(rsT91TynsST

bfrTUksfn mTApk(k TUksfn mT	bfrT Uksfn mT EmsGT	pk(k T EmsGT	bSTE G	DksnUTDk 4nTv7SEmsGT LT	LLT	LLLT	LµT	µT
: 2- TbeTAT 2- TC=T	: x. T	: >: 2T	K. . T	>. >T	x2: T	x29T	>. 1T	>. xT
92- TbeTA12- TC=T	601T	: K6: T	0: KT	>09T	>>KT	>>9T	>01T	>>: T
62- TbeTAx2- TC=T	06>T	: 909T	0: 1T	>6: T	>60T	>6xT	>6. T	>K2T
K2- TbeTA>2- TC=T	x: 0T	: 2x6T	09. T	099T	09. T	060T	061T	091T
02- TbeTA02- TC=T	1. KT	1. KT	061T	02. T	0: : T	0: KT	021T	02xT
>2- TbeTAK2- TC=T	: 2x6T	x: 0T	>. xT	K02T	K0. T	KK. T	K00T	K0>T
x2- TbeTA62- TC=T	: 909T	06>T	. 6>T	K: 9T	K9: T	K: 1T	K: xT	K99T
12- TbeTA92- TC=T	: K6: T	601T	: : xxT	6. 1T	6. 0T	6. . T	K2: T	K29T
. 2- TbeTAT 2- TC=T	: >: 2T	: x. T	: K: >T	6x9T	6>1T	6x0T	6x9T	6x2T

enfk,TKT(k r 7iin Tfkans jnTfksnUT fk 4nT r7ST akUk,nyT r(rsT 91T ynsST Cn4nT I ksfn 4Smn T: 2- TbTeTAT. 2- TC=T(k(I r jnST fksnUT fk 4nT r7ST In,SmT fkansT 4$ n 4Smin T 4k mn Tn4rin TIn4nTI ksfn 4Smn T,nS jnFTyn,T SST4Sakfnfin Tinsk nTnfrTUksfn mT(k(SSST fksnUT7k SaT ,kf SyTikoST4ns$n4nTfksnUT7k SaT p) R) gTC" I eWbgwT4San(I SmT(k(SSSTfirsn T frUSTjn mTyn,raFTfksiSansTh UhsnT2F. Tan(I nS922T (TE(Ssz GST

Ck mr7Sn TfnUTokUhiT4SThirin TakUk,nyT r(rsT91TynsSTfkans jnT SnSTirnUTUkin T4n T fksnUT fk 4nTr7ST fnUTokUhiT akonsnT,k minIT 4San7Sn T4n,n(TUhf k,T4ST nOnyTS ST

Tabel 6. +naȘT k mr7ȘT rnUUki n TnUT okUhi T

gzT	5z4kT	DksnUT EmsGT	5rnUT ekin T EmGT	eT Emo(XG	InUhT Emo(XG
:8T	bUT	>. >T	:. x62T	K29&xKT	
98T	bU9T	x2: T	92: : 2T	K: 28K. T	
68T	bU6T	x29T	92992T	K2x829T	K2. 820T
K8T	bUKT	>. 1T	:. 1K2T	K: >&9T	
08T	bU0T	>. xT	:. x92T	K21891T	
>8T	DUT	>09T	:K. 02T	6: K822T	
x8T	DU9T	>>KT	:09K2T	62>8>KT	
18T	DU6T	>>9T	:0: : 2T	62186xT	62. 8 KT
. 8T	DUKT	>01T	:K112T	6268&KT	
:28T	DU0T	>>: T	:02. 2T	6: >8 0T	
: : 8T	=UT	>6: T	: : >22T	9668K2T	
:98T	=U9T	>60T	: : . 12T	90: 8>6T	
:68T	=U6T	>6xT	:9292T	9K181>T	9K68 . T
:K8T	=UKT	>6. T	: : 0K2T	960800>T	
:08T	=U0T	>K2T	:9: 22T	902809T	
:>8T	wUT	099T	0992T	:2. 8>KT	
:x8T	wU9T	09. T	K. 92T	:2: 81>T	
:18T	wU6T	060T	0: 62T	:2>89: T	:2K8>9T
:. 8T	wUKT	061T	02K2T	:2K860T	
928T	wU0T	061T	K112T	:2: 82KT	
9: 8T	)UT	02. T	61. 2T	198 : T	
998T	)U9T	0: : T	K292T	108>1T	
968T	)U6T	0: KT	6. x2T	198 . T	1K899T
9K8T	)UKT	021T	6. . 2T	1>89KT	
908T	)U0T	02xT	K2>2T	1K82>T	
9>8T	tUT	K02T	6612T	x28 . T	
9x8T	tU9T	K0. T	60x2T	x68 : T	
918T	tU6T	KK. T	6K>2T	x: 8>KT	x68 0T
9. 8T	tUKT	K00T	60: 2T	xK81: T	
628T	tU0T	K0>T	6K. 2T	xK861T	
6: 8T	dUT	K: 9T	:x02T	6089: T	
698T	dU9T	K9: T	:>. 2T	60802T	
668T	dU6T	K: 1T	:xx2T	6>8>0T	6K8>1T
6K8T	dUKT	K: xT	:012T	668 . T	
608T	dU0T	K99T	:>: 2T	6981>T	
6>8T	+UT	6. 1T	: : 92T	968009T	
6x8T	+U9T	6. 0T	: : . 2T	9086>T	
618T	+U6T	6. . T	:992T	908>6T	9K8K>T
6. 8T	+UKT	K2: T	: : 22T	998 6T	
K28T	+U0T	K29T	:9K2T	908>xT	
K: 8T	UUT	6x9T	. 92T	:180: T	
K98T	UU9T	6>1T	. 22T	:. 8 1T	
K68T	UU6T	6x0T	102T	:x8 2T	:18K1T
KK8T	UUKT	6x9T	1>2T	:x81: T	
K08T	UU0T	6x2T	. 62T	:. 819T	

Pembahasan

pjnsnUT nSST jn mT 4Smr nin T r UiT Ik(frnUh T4n TIksnOnUh TfnUTokUhiTan(nT 4k mn TnSSTjn mT4Smr nin Tr UiTIk(frnUh T 4n T IksnOnUh T fkUz FT jnSUT US4niT fz,kyT fksOns nFTUS4niTfz,kyTfksfnrTnUhrT(k mn 4r mT fnyn T,nS Tjn mT(ksraniTfkUz ;fnUTokUhi8T

Ck k,SSh TSST(k(ninSTnSSTUhOnsTjn mT (k(k rySTajnsnUTakfnmnST nSST (Sr(FT UhiT fksOns nT4n TUhiT(k mn 4r mTfnyn T,nS Tjn mT (ksraniTfkUz ;fnUTokUhi8TbSSTjn mT4Sh(f,ȘT4nsST 7nsSmn TnSSTfksaȘyT,nfzsnUzsS(Tfnyn Tursran T eki TpȘST eTvgg)pT

pk(k T jn mT 4Smr nin T 4$ksSanT akonsnT NSarn,T frUSn T 4n T ik(nan jn8T Ck(ksSann TakonsnTNSarn,T(k r 7iin TfnyOnT ak(k TIzsUh 4T4n,n(Tik(nan Tin Uz mTK2TimT 4n,n(Tikn4nn TrUyT4n TfrUSn Tak(k Tyn,raT US4niT(k mmr(In,TakarnST4k mn TikUk Un T ak(k TakfnmnSTfnyn Tn4rin TfnUTokUhiT

bfrT Uksfn mT 4Sh(f,ȘT 4nsST ynaȘT Ik(fninsn TfnUfnsnT4n,n(TIszakaTIsz4riaST S4raUSST fn T CeT RkmnT IrffksT tnoUzsjT pk(nsn m8TpkUk,nyT4SUk,SST4ST,nfzsnUzsS(FTnfrT Uksfn mTSST(k(Ir jnSTin 4r mn TaȘSnTEpS $_9$GT 4n,n(Tin4nsTUSmmSTjnSUT>6F2: - T4n Tn,r(SnT Eb,9“ $_6$GT4n,n(Tin4nsTsk 4nyTjnSUT. F9x- FTyn,TSST nin T (k mynaȘn T SnUh T ,n(fnUT 4k mn T ikirnUh TUSmmSST

5n 4r mn TfkaSTziaS4nTEk$_9$“ $_6$GTjn mT (k(fksSTOns nTnfrHnfrT4n,n(Tin4nsTsk 4nyT jnSUT>F6: - T4n Tin 4r mn T(nmkaS(TERm“ GT (k(Ir jnSTin4nsTsk 4nyTjnSUT2F20- Tirsn mT 4nsSTK- 8T5n 4r mn TaȘSnTnfrTUksfn mT4nsSTCeT RkmnTIrffksTtnoUzsjT4nInUT4$ninSTr UiT Ik(frnUh TfnUTokUhi8TwnsSTfkfksnInTk k,SSh T (k r 7iin T ak(niST fksUh(fnyT r(rsT on(Irsn TikirnUh jnTak(niST USmmST 4n T ak(niSTfksUh(fny jnTiz(IzaSaSTnfrTUksfn mT

I n4nT on(I rsn T (k mni$nUn T i rnUT Ukin T ak(ni S T(k rsr 8TT

Dks4nansi n T I k k,$$ FT i n4nsT pS 9T I n4nTnfrTUksf n mTakf kansT06F>2- FInsU$ jnTnfrT Uksf n mT4nsST aSnTI k(f ninsn T4ST CeT RkmnT I rffksT(k(I r jnSTrnUTUkin TJn mTFkans8TT

Ck mr7$ TUkin Tf nUTokUni T4Shirin T akUk,nyTr(rsT91TynsS4k mn TFkans jnT ShSTrnUT Ukin T snUnT 4nsST jn mT U$mnST an(I nST jn mT Uosk 4nyT 4nsST iz(I zaSST on(I rsn T jn mT f ksf k4nHI k4n8T

Cn4nTI ksf n 4Smn TnfrTUksf n mT: 2- T nfrTUksf n mTPT. 2- Tak(k TI zsUh 4T(k(I r jnST i rnUT Ukin T snUnHsnUnT K2. F20T i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin T(nari TI n4nT (rUTLFakyS mmnTf nUTokUni TSS4nI nUT4Smr nin T r Ui T,n UnS8TRni nTf nUTokUni T4nsSTnfrTUksf n mT I n4nTI ksf n 4Smn T: 2- TnfrTUksf n mTPT. 2- T ak(k TI zsUh 4T(k(I r jnSTi rnUTUkin T4SnUnaT snUnHsnUnTK22Ti mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mT92- T nfrTUksf n mTPT12- Tak(k TI zsUh 4T(k(I r jnST i rnUT Ukin T snUnHsnUnT 62. F. KT i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin T(nari TI n4nT (rUTLFakyS mmnTf nUTokUni TSS4nI nUT4Smr nin T r Ui T,n UnS8TRni nTf nUTokUni T4nsSTnfrTUksf n mT I n4nTI ksf n 4Smn T92- TnfrTUksf n mTPT12- T ak(k TI zsUh 4T(k(I r jnSTi rnUTUkin T4SnUnaT snUnHsnUnT622Ti mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mT62- TPT x2- Tak(k TI zsUh 4T(k(I r jnSTi rnUTUkin T snUnHsnUnT9K6F. . Ti mo(X8TCn4nTI ksf n 4Smn TSST ynaSTi rnUTUkin T(nari TI n4nT(rUTLLFakyS mmnT f nUTokUni TSST4nI nUT4Smr nin Tr Ui T,n UnS8T RninT f nUT okUni T 4nsST nfrT Uksf n mT I n4nT I ksf n 4Smn T62- TnfrTUksf n mTPTx2- Tak(k T I zsUh 4T(k(I r jnSTi rnUTUkin T4SnUnaTsnUnHsnUnT 922Ti mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mTK2- T nfrTUksf n mTPT>2- Tak(k TI zsUh 4T(k(I r jnST i rnUT Ukin T snUnHsnUnT : 2KF>9T i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin T(nari TI n4nT (rUTi k,naT: TJn mT4SajnsnUn Tr Ui TI nan mn T 4S4Sm8TRni nTf nUTokUni TnfrTUksf n mTI n4nT I ksf n 4Smn TK2- TbeTPT>2- Tak(k TI zsUh 4T (k(I r jnSTi rnUT Ukin T 4SnUnaT snUnHsnUnT x2T i mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mT02- T nfrTUksf n mTPT02- Tak(k TI zsUh 4T(k(I r jnST i rnUT Ukin T snUnHsnUnT 1KF96T i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin TJn mT4S4nI nUT f SnT4$ ni nSTr Ui TI nan mn T4S4Sm8TRni nTf nUT okUni TnfrTUksf n mTI n4nTI ksf n 4Smn T02- TnfrT Uksf n mTPT02- Tak(k TI zsUh 4T(k(I r jnSTi rnUT Ukin T4SnUnaTsnUnHsnUnTx2Ti mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mT>2- T beTPTK2- Tak(k TI zsUh 4T(k(I r jnSTi rnUT Ukin T snUnHsnUnT x6F. 0T i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin T(nari TI n4nT (rUTi k,naTLTJn mT4SajnsnUn Tr Ui TI nan mn T 4S4SmT(rUTi k,naTL8TRni nTf nUTokUni TnfrT Uksf n mTI n4nTI ksf n 4Smn T>2- TnfrTUksf n mTPT K2- Tak(k TI zsUh 4T(k(I r jnSTi rnUTUkin T 4SnUnaTsnUnHsnUnTx2Ti mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mTx2- T nfrTUksf n mTPT62- Tak(k TI zsUh 4T(k(I r jnST i rnUT Ukin T snUnHsnUnT 6KF>1T i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin T(nari TI n4nT (rUTk,naT: TJn mT4SajnsnUn Tr Ui TI nan mn T 4S4Sm8TRni nTf nUTokUni TnfrTUksf n mTI n4nT I ksf n 4Smn Tx2- TnfrTUksf n mTPT62- Tak(k T I zsUh 4T(k(I r jnSTi rnUTUkin T4SnUnaTsnUnHsnUnT K2Ti mo(X8T

Cn4nTI ksf n 4Smn TnfrTUksf n mT12- T nfrTUksf n mTPT92- Tak(k TI zsUh 4T(k(I r jnST i rnUT Ukin T snUnHsnUnT 9KFK>T i mo(X8T Cn4nT I ksf n 4Smn TSSTynaSTi rnUTUkin T(nari TI n4nT

(rUTi k,naTj n mT4Saj nsnUn Tr Ui TI nan mn T 4S4S m8TRni nTf nUTokUhi Tnf r TUksf n mTI n4nT I ksf n 4S mn T12- Tnf r TUksf n mTPT92- Tak(k T I zsUh 4T(k(I r j nSTi r nUTUki n T4SUhaTsnUhHsnUhT 90TI mo(XT

Cn4nTI ksf n 4S mn Tnf r TUksf n mT. 2- T nf r TUksf n mTPT: 2- Tak(k TI zsUh 4T(k(I r j nST i r nUT Uki n T snUhHsnUhT : 1FK1T i mo(X8T Cn4nT I ksf n 4S mn TS Syna,STi r nUTUki n Tj n mT4S4nI nUT US4ni T f SanT 4S$ ni nST r Ui T I nan mn T 4S 4S mT i nsk nTUS4ni T(nari TI n4nTi k,naT(rUTj n mT 4Saj nsnUn 8T

KESIMPULAN DAN SARAN

Kesimpulan

pkarnST 4k mn T yna,ST I k k,S$S T akf nmn$ n nT 4S$snSn T 4n,n(T rsnSn T akf k,r(j nT4nI nUT4S(f,STi ka$ I r,n Takf nmnST f ksSr UAT

:8T+na,STI k(ks$ann Tf nyn TI k(f r nUh Tf nUT okUhi Tnf r T Uksf n mT (k(k rySTr7STf nyn T f n mr n FIi n 4r mn TpS 9Takf kansT>6F2: - T akySmmnT 4nI nUT 4S$ ni n T akf nmnST on(I r sn TI k(f r nUh Tf nUTokUhi 8T

98T+na,STr7STi r nUTUki n Tf nUT okUhi T 4k mn T i z(I zaSaST: 2- Tnf r TUksf n mTPT. 2- Tak(k T I zsUh 43T92- Tnf r TUksf n mTPT12- Tak(k T I zsUh 4T4n T62- Tnf r TUksf n mTPTx2- Tak(k T I zsUh 4T(k(I r j nSTi r nUTUki n T4SUhaTsnUhH snUhTj n mT4$ ksaj nsnUhi n Tr Ui T,n UhSTEB922T i mo(9G8T

68T+na,STr7STi r nUTUki n Tf nUT okUhi T 4k mn T i z(I zaSaSTK2- Tnf r TUksf n mTPT>2- Tak(k T I zsUh 43T02- Tnf r TUksf n mTPT02- Tak(k T I zsUh 4T4n T>2- Tnf r TUksf n mTPTK2- Tak(k T I zsUh 4T(k(I r j nSTi r nUTUki n T4SUhaTsnUhH snUhTj n mT4$ ksaj nsnUhi n Tr Ui T4S 4S mTEBx2T i mo(9G8T

K8T+na,STr7STi r nUTUki n Tf nUT okUhi T 4k mn T i z(I zaSaSTx2- Tnf r TUksf n mTPT62- Tak(k T I zsUh 4T4n T12- Tnf r TUksf n mTPT92- Tak(k T I zsUh 4T(k(I r j nSTi r nUTUki n T4SUhaTsnUhH snUhTj n mT4$ ksaj nsnUhi n Tr Ui T4S 4S mTEB92T i mo(9G8T

08T+na,STr7STi r nUTUki n Tf nUT okUhi T 4k mn T i z(I zaSaST. 2- Tnf r TUksf n mTPT: 2- Tak(k T I zsUh 4T(k(I r j nSTi r nUTUki n T 4$ nOnyT I ksaj nsnUh Tr Ui T 4S 4S mT akySmmnT f nUT okUhi TUhi T f SanT4S$ ni n Tr Ui T4S 4S m8T

Saran

pnsn Hnsn Tj n mT4San(I n$ n T4n,n(T I k k,S$S TS Sn4n,nyTAT

:8TCks,rTI k k,S$S T,kf SyT,n 7rUTUksrUh(nTr7ST i knran T(k mSmnUTyna,STi r nUTUki n TUSmmST akySmmnT US4ni Tyn j nTr Ui T,n UhSTUkUhI ST 4nI nUT4S$ ni n Tr Ui T,nI SaTnUhaTI ksi ksnan T 7n,n 8T

98TCks,rTI k k,S$S T,kf SyT,n 7rUTr Ui Ton(I r sn T f kUz FT (k mSmnUT f kUz T f SnT 4San(I r sT 4k mn T ak(non(Tnf r T4nI nUT(k 7n4$ n T f kUz TUhyn TUksyn4nI Tnan(FTakySmmnTf kUz T Uksakf r UT 4nI nUT 4S$ ni n T I n4nT Uh nyT 4k mn TI knan(n TUSmmST

DAFTAR PUSTAKA

b 4SSUSTb+T4n Tpr nsj zTp8T*Jurnal Penelitian Pemukiman Vol.XII No. 1-2.1996. Penelitian Pemanfaatan Semen Abu Terbang Untuk Pembuatan Paving Block*8T

b z $ 8T: . 1. 8T *Spesifikasi* Dnyn TDn mr n T DnmSn TbTEp5 8pgLT*5-04-1989-F)*8TDn 4r mT AT² nj nan TWCRDTwkI nsUk(k TCki os7nn T v(r(8T

DkansTF4i i 8T. . . 18T*Limbah Industri Abu Terbang Bagi Industri. Seminar Nasional Material dan Lingkungan Dalam Pembangunan Industri*8TWCL8TDn 4r mT. T i Uzf ksT. . . 18T wSi j T TRn nc8T *Perkembangan Teknologi Beton dan Peran Abu Terbang Dalam Pembuatan Beton Ringan Kinerja Tinggi Abu Terbang*8T wkI r USTRk UksST gkmnsnT I SakUT 4n T eki z,zmST DS4n mT Ck 4nj nmr nn T 4n T Ck(naj nsni nUh T LCe) 58T

pr47n n8T92298T *Metoda Statistika*8TDn 4r mTAT ensaStz8T

² nUST pT +S4nj nUST *Penelitian Pendahuluan Pemanfaatan Abu Terbang untuk Pembuatan Paving Block*8T pUhcT Ck k,SST DS4n mT Dnyn TDn mr n TCr anUTWSSn mT Ck(ri S n 8T

HHHHHH8T : . . 08T T *Teknologi dan Pembuatan Semen*8T T pk(SnsT pkynsST eki z,zmST pk(k T 4n T bI ,SnaSj n8T Ce8T pk(k T Cn4n mTECksaksz G8T

HHHHHH8T : . . 68T *Makalah Seminar Nasional Batubara Indonesia*8T t ni r ,UhaT eki ST v SkksaShaTd n47nyTRn4nT zmj ni nsUh8T