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# LAMPIRAN

## HASIL PENGUJIAN KEKERASAN

Material	Spesimen ke-	d1	d2	d rata-rata	conversi (mm)	VHN
Al/CNT 5%	1	29,5	28,5	29,00	0,029	22,0451843
		29,5	27,1	28,30	0,0283	23,14924646
		27,2	32	29,60	0,0296	21,16051863
		33,1	33	33,05	0,03305	16,97332012
		28,5	27,6	28,05	0,02805	23,56372787
		rata2				
	2	23,6	23,1	23,35	0,02335	34,00446607
		25,6	25,2	25,40	0,0254	28,73705747
		32,7	32,1	32,40	0,0324	17,6611797
		30,6	31,1	30,85	0,03085	19,48046831
		24,5	25,9	25,20	0,0252	29,19501134
		rata2				
	3	28	29,4	28,70	0,0287	22,50846799
		24,6	23,5	24,05	0,02405	32,05380336
		22,3	22,3	22,30	0,0223	37,28206881
		25,5	25,6	25,55	0,02555	28,40062653
		24,2	24,6	24,40	0,0244	31,14082236
		rata2				

Material	Spesimen ke-	d1	d2	d rata-rata	conversi (mm)	VHN
Al/CNT 10%	1	24,7	25,5	25,10	0,0251	29,42810432
		29,2	28,4	28,80	0,0288	22,35243056
		31,9	31,8	31,85	0,03185	18,2764085
		28,3	26,9	27,60	0,0276	24,33837429
		rata2				
	2	29,4	29,5	29,45	0,02945	21,37662465
		28,3	29,1	28,70	0,0287	22,50846799
		28,5	27,6	28,05	0,02805	23,56372787
		27,4	29,6	28,50	0,0285	22,82548476
		27,7	27,3	27,50	0,0275	24,51570248
	rata2					22,95800155
	3	39,5	38,7	39,10	0,0391	12,12707923
		37	37	37,00	0,037	13,54273192
		34,6	34,5	34,55	0,03455	15,53150806
		39,8	40,6	40,20	0,0402	11,4724883
33,5		33,2	33,35	0,03335	16,66932651	
rata2					13,8686268	

Material	Spesimen ke-	d1	d2	d rata-rata	conversi (mm)	VHN
Al/SiC 5%	1	22,1	22	22,05	0,02205	38,13225971
		21,5	21,6	21,55	0,02155	39,92226571
		22,6	22,1	22,35	0,02235	37,11544525
		21,7	21,6	21,65	0,02165	39,55432052
		22,5	22,2	22,35	0,02235	37,11544525
		rata2				
	2	15,4	15,5	15,45	0,01545	77,66990291
		20,7	20,1	20,40	0,0204	44,55017301
		22,6	22,5	22,55	0,02255	36,45999774
		22,1	20	21,05	0,02105	41,84133468
		23,4	21,6	22,50	0,0225	36,62222222
		rata2				
	3	24,2	24,1	24,15	0,02415	31,78889703
		24,1	23,6	23,85	0,02385	32,5936474
		24,2	24,2	24,20	0,0242	31,65767366
		24,3	23,5	23,90	0,0239	32,45741496
		21,5	21,6	21,55	0,02155	39,92226571
		rata2				

Material	Spesimen ke-	d1	d2	d rata-rata	conversi (mm)	VHN
Al/SiC 10%	1	22,9	23,5	23,20	0,0232	34,44560048
		22,8	22,6	22,70	0,0227	35,97973956
		22,2	22,5	22,35	0,02235	37,11544525
		22,6	22,9	22,75	0,02275	35,82176066
		22,2	21,6	21,90	0,0219	38,65640833
		rata2				
	2	23,6	21,8	22,70	0,0227	35,97973956
		23,1	22,5	22,80	0,0228	35,66481994
		22,5	22,7	22,60	0,0226	36,29884877
		23,2	21,1	22,15	0,02215	37,78872759
		22,2	21,7	21,95	0,02195	38,48049771
		rata2				
	3	24,9	24,1	24,50	0,0245	30,88713036
		21,4	21,6	21,50	0,0215	40,10816658
		22,2	22,5	22,35	0,02235	37,11544525
		23,2	23,2	23,20	0,0232	34,44560048
		23,2	22,8	23,00	0,023	35,04725898
		rata2				

Material	Spesimen ke-	d1	d2	d rata-rata	conversi (mm)	VHN
Al/SiC 15%	1	22,4	21,1	21,75	0,02175	39,19143876
		20,5	20,8	20,65	0,02065	43,47800597
		22,1	21,4	21,75	0,02175	39,19143876
		22,4	20,5	21,45	0,02145	40,29536897
		18,5	19,9	19,20	0,0192	50,29296875
		rata2				
	2	18,5	18,6	18,55	0,01855	53,87929469
		22	20,3	21,15	0,02115	41,44660731
		19,6	20,4	20,00	0,02	46,35
		18,8	18,8	18,80	0,0188	52,45586238
		21,5	21	21,25	0,02125	41,05743945
		rata2				
	3	20,6	20	20,30	0,0203	44,99017205
		19,3	19,4	19,35	0,01935	49,51625503
		19,2	19,4	19,30	0,0193	49,77314827
		21,4	20,9	21,15	0,02115	41,44660731
		20,5	20,9	20,70	0,0207	43,26822096
		rata2				

VHN rata2	Al/CNT 5%	Al/CNT 10%	Al/SiC 5%	Al/SiC 10%	Al/SiC 15%
spesimen 1	21,37839948	23,59882942	38,36794729	36,40379086	42,48984424
spesimen 2	25,81563658	22,95800155	47,42872611	36,84252672	47,03784077
spesimen 3	30,27715781	13,8686268	33,68397975	35,52072033	45,79888073
VHN rata2 dari ke-3	25,82373129	20,14181926	39,82688438	36,2556793	45,10885524

## HASIL PENGUJIAN DENSITAS

Material	Spesimen ke-	Wu (gram)	Wf (gram)	Densitas (gram/cm <sup>3</sup> )
Al/CNT 5%	1	1,598	11,242	1,6925857
	2	1,599	11,170	1,7030621
	3	1,587	11,250	1,6813274
	rata-rata			1,6923251

Material	Spesimen ke-	Wu (gram)	Wf (gram)	Densitas (gram/cm <sup>3</sup> )
Al/CNT 10%	1	1,616	15,295	1,299603808
	2	1,601	15,212	1,295045501
	3	1,559	15,764	1,223945044
	rata-rata			1,2728648

Material	Spesimen ke-	Wu (gram)	Wf (gram)	Densitas (gram/cm <sup>3</sup> )
Al/SiC 5%	1	1,533	6,585	2,568218773
	2	1,560	6,445	2,650343535
	3	1,535	6,450	2,614402004
	rata-rata			2,6109881

Material	Spesimen ke-	Wu (gram)	Wf (gram)	Densitas (gram/cm <sup>3</sup> )
Al/SiC 10%	1	1,551	6,294	2,688795411
	2	1,544	6,340	2,663419584
	3	1,558	6,435	2,650919555
	rata-rata			2,6677115

Material	Spesimen ke-	Wu (gram)	Wf (gram)	Densitas (gram/cm <sup>3</sup> )
Al/SiC 15%	1	1,594	6,318	2,739939333
	2	1,583	6,471	2,673056866
	3	1,550	6,479	2,625482625
	rata-rata			2,6794929

## HASIL PENGUJIAN KEAUSAN

b	Al/CNT 5%	Al/CNT 10%	Al/SiC 5%	Al/SiC 10%	Al/SiC 15%
	(mm)	(mm)	(mm)	(mm)	(mm)
b1	1,75	1,3125	1,1875	0,6875	1,125
b2	2,0625	1,8125	0,875	0,5625	1,25
b3	1,3125	1,6875	1,0625	0,5625	1,0625
b4	1,125	3,1875	1,5625	0,5	0,875
b5	1,3125	2,9375	2,5	0,8125	0,6875
b6		2,125	2,4375	1,1875	
b7		2,375		1,6875	
b8					
b9					

b	Al/CNT 5%	Al/CNT 10%	Al/SiC 5%	Al/SiC 10%	Al/SiC 15%
	(mm)	(mm)	(mm)	(mm)	(mm)
b1	0,5625	2,125	1	0,875	1,5625
b2	1,6875	2,75	0,75	0,6875	1,75
b3	1	2,375	0,625	0,625	1,6875
b4	1,5	2,625	0,9375	0,625	1
b5	1,625	3,25	2	1,0625	0,5
b6	0,8125		1,625	1,125	
b7	1,1875		1,4375	1,75	
b8	1,25			1	
b9	1,5				

b	Al/CNT 5%	Al/CNT 10%	Al/SiC 5%	Al/SiC 10%	Al/SiC 15%
	(mm)	(mm)	(mm)	(mm)	(mm)
b1	0,9375	2,0625	1,0625	0,875	0,5
b2	1,1875	3,3125	0,5	0,875	1,0625
b3	1,3125	2,875	1,3125	0,625	1,375
b4	1,875	2,9375	2,125	1,1875	1,6875
b5	2,1875	2,0625	2	1,4375	2,375
b6	1,0625		0,8125	1,625	1,5
b7				1,3125	1,0625
b8					
b9					

b rata-rata	Al/CNT 5%	Al/CNT 10%	Al/SiC 5%	Al/SiC 10%	Al/SiC 15%
Spesimen 1	1,513	2,205	1,604	0,875	1
Spesimen 2	1,236	2,625	1,196	0,969	1,3
Spesimen 3	1,427	2,650	1,302	1,134	1,366
b rata-rata dari ke-3	1,392	2,493	1,3675	0,9925333	1,222

Material	b rata-rata dari ke-3 (mm)	B (mm)	r (mm)	Po (Kg)	Lo (m)	Wo (mm <sup>3</sup> )	Ws (mm <sup>3</sup> /kgm)
Al/CNT 5%	1,392	3	13	2,12	66,6	0,051869775	0,000551056
Al/CNT10%	2,493	3	13	2,12	66,6	0,297963791	0,003165517
Al/SiC 5%	1,368	3	13	2,12	66,6	0,049178883	0,000522468
Al/SiC 10%	0,993	3	13	2,12	66,6	0,018803207	0,000199762
Al/SiC 15%	1,2220	3	13	2,12	66,6	0,035092174	0,000372813

## GALAT PERAMBATAN

Wu	Wf	Densitas	Galat Perambatan	Galat Perambatan rata2
1,598	11,242	1,693	0,125032646	0,125
1,599	11,170	1,703	0,125806580	
1,587	11,250	1,681	0,124205105	
1,616	15,295	1,300	0,095985506	0,094
1,601	15,212	1,295	0,095653213	
1,559	15,764	1,224	0,090412093	
1,533	6,585	2,568	0,189832854	0,193
1,56	6,445	2,650	0,195890224	
1,535	6,45	2,614	0,193249593	
1,551	6,294	2,689	0,198743395	0,197
1,544	6,34	2,663	0,196870680	
1,558	6,435	2,651	0,195934414	
1,594	6,318	2,740	0,202494838	0,198
1,583	6,471	2,673	0,197553503	
1,55	6,479	2,625	0,194057976	