DAFTAR PUSTAKA

Abdurohman, K., & Adhitya, M. (2021). Effect of seawater immersion on mechanical properties of glass/vinylester composites for marine application. *AIP Conference Proceedings*, *2366*. https://doi.org/10.1063/5.0060163

Anonim. (2002). *Composite Materials Handbook* (Vol. 3).

Arafah, N., & Sugiyana, D. (2020). *PEMANFAATAN SERAT RAMI (Boehmeria nivea) SEBAGAI MATERIAL PEREDAM SUARA UNTUK BANGUNAN RUMAH*.

Ardhy, sanny. (2019). *PEMBUATAN KAPAL NELAYAN FIBERGLASS KOTA PADANG DENGAN METODE HAND LAY UP SANNY ARDHY 1 , MEIKI ERU PUTRA 2 , ISLAHUDDIN 3*. *2*(1). http://jurnal.umsb.ac.id/index.php/RANGTEKNIKJOURNAL

Arum, W. F., & Nisa Ismulia, K. (2022). ANALYSIS OF THE COMPOSITE PROPERTIES OF RAMP/LYCAL FIBER VARIATION OF LAYER 1, 2, AND 3 FIBER ON STRUCTURAL MATERIALS OF LSU AIRCRAFT. *Teknika STTKD: Jurnal Teknik, Elektronik, Engine*, *8*(2), 342–349. https://doi.org/10.56521/teknika.v8i2.684

ASTM D 638 – 02a. (n.d.). *Standard Test Method for Tensile Properties of Plastics 1*. www.astm.org

ASTM D 790 – 02. (n.d.). *Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials*. www.astm.org

Behera, S., Gautam, R. K., & Mohan, S. (2022). Polylactic acid and polyhydroxybutyrate coating on hemp fiber: Its effect on hemp fiber reinforced epoxy composites performance. *Journal of Composite Materials*, *56*(6), 929–https://doi.org/10.1177/00219983211066991

Bhat, R., Mohan, N., Sharma, S., & Rao, S. (2022). *Volume 1 Issue 1 Influence of Seawater Absorption on the Hardness of Glass Fiber/Polyester Composite*. https://doi.org/10.57159/gadl.jcmm.1.1.23003

Bhoopathi, R., Deepa, C., Sasikala, G., & Ramesh, M. (2015). Experimental Investigation on Mechanical Properties of Hemp-Banana-Glass Fiber Reinforced Composites. *Applied Mechanics and Materials*, *766–767*, 167–172. https://doi.org/10.4028/www.scientific.net/amm.766-767.167

Célino, A., Fréour, S., Jacquemin, F., & Casari, P. (2013). Characterization and modeling of the moisture diffusion behavior of natural fibers. *Journal of Applied Polymer Science*, *130*(1), 297–306. https://doi.org/10.1002/app.39148

Célino, A., Fréour, S., Jacquemin, F., & Casari, P. (2014). The hygroscopic behavior of plant fibers: A review. *Frontiers in Chemistry*, *1*(JAN). https://doi.org/10.3389/fchem.2013.00043

Chawla, N. (1987). *Metal Matrix Composites* (2nd ed., Vol. 2). https://doi.org/10.1007/978-1-4614-9548-2

Djafar, Z., Renreng, I., & Jannah, M. (2021). Tensile and Bending Strength Analysis of Ramie Fiber and Woven Ramie Reinforced Epoxy Composite. *Journal of Natural Fibers*, *18*(12), 2315–2326. https://doi.org/10.1080/15440478.2020.1726242

Djeghader, D., & Redjel, B. (2017). Fatigue resistance of randomly oriented short glass fiber reinforced polyester composite materials immersed in seawater environment. *Mechanics and Industry*, *18*(6). https://doi.org/10.1051/meca/2016087

Fagelman, K. E., & Guthrie, J. T. (2006). The effect of pigmentation on the mechanical properties and the crystallisation behaviour of polymer blends ıoy®). *Dyes and Pigments*, *69*(1–2), 62–73. s://doi.org/10.1016/j.dyepig.2005.02.017

Fikri Zulfikar, M., Kusdiantini, E., & Nurjannah, S. (2017). IDENTIFIKASI JENIS PIGMEN DAN UJI POTENSI ANTIOKSIDAN EKSTRAK PIGMEN BAKTERI Rhodococcus sp HASIL ISOLASI DARI SEDIMEN SUMBER AIR PANAS GEDONG SONGO. In *Jurnal Biologi* (Vol. 6).

Gunoz, A., Kepir, Y., & Kara, M. (2022). The investigation of hardness and density properties of GFRP composite pipes under seawater conditions. *Turkish Journal of Engineering*, *6*(1), 34–39. https://doi.org/10.31127/tuje.775536

Hadi, B. K. (2000). *Mekanika Struktur Komposit*. Departemen Pendidikan Nasional.

Hassan, A., Khan, R., Khan, N., Aamir, M., Pimenov, D. Y., & Giasin, K. (2021). Effect of seawater ageing on fracture toughness of stitched glass fiber/epoxy laminates for marine applications. *Journal of Marine Science and Engineering*, *9*(2), 1–9. https://doi.org/10.3390/jmse9020196

Hassan, S. A. (2005). *Linear Static Finite Element Analysis of Composites Hat-Stiffened Laminated Plates*. https://doi.org/10.13140/RG.2.1.3857.7368

Hu, X., Pan, X., & Johnston, W. M. (2014). Effects of pigments on dynamic mechanical properties of a maxillofacial prosthetic elastomer. *Journal of Prosthetic Dentistry*, *112*(5), 1298–1303. https://doi.org/10.1016/j.prosdent.2014.04.004

Huang, Q. Z., & Hu, Z. H. (2013). Effects of seawater immersion on mechanical properties of CFRP composites. *Advanced Materials Research*, *785–786*, 209–213. https://doi.org/10.4028/www.scientific.net/AMR.785-786.209

Ivens, G. P. (1983). Chemical process dynamics. *The Chemical Engineering Journal*, *27*(2), 120121. https://doi.org/https://doi.org/10.1016/0300-9467(83)80063-x

V., & Senkerik, V. (n.d.). *Effect of Pigment Concentration on Mechanical ɔerties of Polycarbonate*.

Jiang, L., Fu, J., & Liu, L. (2020). Seawater Degradation Resistance of Straw Fiber reinforced Polyvinyl Chloride Composites. In *BioResources* (Vol. 15, Issue 3).

Jones, R. M., & Millard, R. (1999). *MECHANICS OF COMPOSITE MATERIALS MECHANICS OF COMPOSITE MATERIALS SECOND EDITION Library of Congress Cataloging-in-Publication Data*.

Jose, S., Rajna, S., & Ghosh, P. (2016). Ramie Fibre Processing and Value Addition. *Asian Journal of Textile*, *7*(1), 1–9. https://doi.org/10.3923/ajt.2017.1.9

Kwon, D. J., Shim, J. H., Kong, J., & Nam, S. Y. (2021). Impacts of colorants on mechanical properties of epoxy-based fiber composites. *Applied Surface Science Advances*, *6*. https://doi.org/10.1016/j.apsadv.2021.100178

Li, W., Wen, F., Zhou, M., Liu, F., Jiao, Y., Wu, Q., & Liu, H. (2022). Assessment and Prediction Model of GFRP Bars' Durability Performance in Seawater Environment. *Buildings*, *12*(2). https://doi.org/10.3390/buildings12020127

Lodeiro, M. J., Tomlins, P. E., & Pearce, A. (2000). *NPL Report CMMT(A) 258 The Influence of Pigments on the Mechanical Properties of High Density Polyethylene (HDPE)*.

Lubis, P. C. (2022). Analisa Pengaruh Variasi Waktu Post Weld Heat Treatment Pada Pengelasan SMAW Baja A36 TerhLubis Paolo Ciptantoadap Kekuatan Uji Tarik, Uji Impak dan Struktur Mikro. *Jurnal Teknik Perkapalan*, *10*(3), 48. https://ejournal3.undip.ac.id/index.php/naval

Masruri, D., Raharjo, W. W., & Ariawan, D. (2011). *PENGARUH ORIENTASI SUDUT ANYAMAN SERAT CANTULA TERHADAP KEKUATAN BENDING DAN GAYA TARIK PAKU KOMPOSIT SEMEN SERBUK AREN-CANTULA*.

Novarini, E., Danny, M., Balai, S., Tekstil, B., Jenderal, J., Yani, A., & 390 Bandung, N. (2015a). *POTENSI SERAT RAMI (BOEHMERIA NIVEA S. JD) SEBAGAI BAHAN BAKU INDUSTRI TEKSTIL DAN PRODUK STIL DAN TEKSTIL TEKNIK THE POTENCY OF RAMIE FIBER*

(BOEHMERIA NIVEA S. GAUD) AS A RAW MATERIALS FOR TEXTILES AND TEXTILE PRODUCTS AND TECHNICAL TEXTILE INDUSTRIES.

Novarini, E., Danny, M., Balai, S., Tekstil, B., Jenderal, J., Yani, A., & 390 Bandung, N. (2015b). *POTENSI SERAT RAMI (BOEHMERIA NIVEA S. GAUD) SEBAGAI BAHAN BAKU INDUSTRI TEKSTIL DAN PRODUK TEKSTIL DAN TEKSTIL TEKNIK*.

Nurhidayah N. (2016). *PENGARUH VARIASI FRAKSI VOLUME SERAT DAUN LONTAR (Borassus flabelifer) TERHADAP SIFAT FISIK DAN SIFAT MEKANIK KOMPOSIT POLYESTER*.

Nurullah, F. P., Paundra, F., & Maulana, A. (n.d.). THE EFFECT OF WEBBING ANGLE ORIENTATION ON PHYSICAL AND MECHANICAL PROPERTIES OF BOEHMERIA NIVEA FIBER COMPOSITES. *Jurnal Media Mesin*, *24*(1).

Panji, N. (2013). *Pengetahuan tentang cat teori dan aplikasi*.

Pratiwi, F. S. (2023). *Ada 1,27 Juta Nelayan di Indonesia pada 2022*. https://dataindonesia.id/sektor-riil/detail/ada-127-juta-nelayan-di-indonesia-pada-2022

Ramón-Valencia, F., Lopez-Arraiza, A., Múgica, J. I., Aurrekoetxea, J., Suarez, J. C., & Ramón-Valencia, B. (2015). Influencia del agua de mar en el comportamiento frente a impacto de baja energía de un nuevo laminado de resina natural reforzada con fibra de fique Colombiano. *DYNA (Colombia)*, *82*(194), 170–177. https://doi.org/10.15446/dyna.v82n194.48622

Ria Arlita, N., Karna Radjasa, O., Santoso Program Studi Ilmu Kelautan, A., & Perikanan dan Ilmu Kelautan, F. (2013). IDENTIFIKASI PIGMEN KAROTENOID PADA BAKTERI SIMBION RUMPUT LAUT Caulerpa essoides (Vahl) C. Agardh. In *Journal Of Marine Research* (Vol. 2, Issue ttp://ejournal-s1.undip.ac.id/index.php/jmr

Setyanto, R. H. (2012). *Review: Teknik Manufaktur Komposit Hijau dan Aplikasinya* (Vol. 11, Issue 1).

Sidi, P., Wahyudi, M. T., Teknik, J., Kapal, P., Perkapalan, P., Surabaya, N., & Kimia, J. T. (2013). Aplikasi Metoda Taguchi Untuk Mengetahui Optimasi Kebulatan Pada Proses Bubut Cnc. In *Jurnal Rekayasa Mesin* (Vol. 4, Issue 2).

Sutrisno, & Azmal. (2020). *Analisa Sifat Mekanik Pengaruh Variasi Perendaman Dan Penekanan Pada Komposit Berbahan Serat Budung*.

Taufik, M. I. (2013). PERILAKU CREEP PADA KOMPOSIT POLYESTER DENGAN SERAT KULIT BAMBU APUS (GIGANTOCHLOA APUS (J.A & J. H. SCHULTES) KURZ). *Jurnal FEMA*, *1*(1). chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/file:///E:/S2%20TEKNIK%20MESIN%20UNHAS/TESIS%20S2%20AZWAR/JURNAL%20REFERENSI/Taufik%202013%20PERILAKU%20CREEP%20PADA%20KOMPOSIT%20POLYESTER.pdf

Tjahjanti, P. H. (2018). *TEORI DAN APLIKASI MATERIAL KOMPOSIT DAN POLIMER (TJAHJANTI)*. https://library.umy.ac.id/koleksi/view/35232/Composite-Materials-Handbook

Vidinha, H., Branco, R., Neto, M. A., Amaro, A. M., & Reis, P. (2022). Numerical Modeling of Damage Caused by Seawater Exposure on Mechanical Strength in Fiber-Reinforced Polymer Composites. *Polymers*, *14*(19). https://doi.org/10.3390/polym14193955

Widjayarto, A. (2007). *PENGARUH ORIENTASI SERAT TERHADAP SIFAT FISIS DAN MEKANIS KOMPOSIT (SERAT GELAS-E, RESIN JUSTUS 157)*.

Zhou, J., Li, Z., & Yu, C. (2017). Property of ramie fiber degummed with Fenton ent. *Fibers and Polymers*, *18*(10), 1891–1897. s://doi.org/10.1007/s12221-017-6489-0

LAMPIRAN I

A. HASIL PENGUJIAN TARIK

B. HASIL PENGUJIAN BENDING

C. HASIL UJI DAYA SERAP AIR

Tabel Lampiran 1. Hasil Uji tarik Komposit Tenunan Serat Rami 0% pigment pastes

Nama Spesimen	Lama Perendaman	Lebar (mm)	Tebal (mm)	Luas (mm^2)	Luas (m^2)	Beban (Kg)	Beban (N)	Tegangan (PA)	Tegangan (Mpa)	Panjang mula-mula (mm)	Perpanjangan (ΔL) (mm)	Regangan (€)	Regangan (%)	Modulus Tarik (GPa)	Standar Deviasi Tegangan Tarik (Mpa)	Standar Deviasi Regangan Tarik (%)	Standar Deviasi Modulus Tarik (Gpa)
TSR0-0	TP	14,1	3,6	51,3	0,000051314	222,34	2180,37	42544132,25	42,54	50,00	2,59	0,05	5,19	0,83	3,69	0,77	0,08
TSR0-2	2	12,1	4,1	50,0	0,000050002	235,39	2308,39	46142399,93	46,14	50,00	2,92	0,06	5,83	0,79	2,41	0,50	0,04
TSR0-4	4	12,0	4,1	49,2	0,000049202	208,13	2041,05	41477217,40	41,48	50,00	2,99	0,06	5,98	0,70	1,59	0,43	0,06
TSR0-6	6	12,1	4,0	48,2	0,000048168	210,68	2066,03	42878790,24	42,88	50,00	2,55	0,05	5,09	0,85	1,74	0,40	0,06
TSR0-8	8	11,9	4,1	48,6	0,000048622	202,49	1985,72	40846929,91	40,85	50,00	2,74	0,05	5,49	0,74	0,64	0,08	0,01
TSR0-10	10	12,1	4,2	50,7	0,000050742	216,10	2119,23	41747297,66	41,75	50,00	2,59	0,05	5,17	0,81	1,51	0,61	0,07
TSR0-12	12	12,0	4,3	51,7	0,000051684	227,81	2234,04	43297286,23	43,30	50,00	2,92	0,06	5,85	0,74	2,45	0,35	0,02
TSR0-	14	12,1	4,3	51,9	0,000051856	220,34	2160,83	41671191,88	41,67	50,00	3,00	0,06	5,99	0,70	0,82	0,54	0,06

Tabel Lampiran 2 Hasil Uji tarik Komposit Tenunan Serat Rami 5% pigment pastes

Lama Perendaman	**Lebar** (mm)	**Tebal** (mm)	**Luas** (mm^2)	**Luas** (m^2)	**Beban** (Kg)	**Beban** (N)	**Tegangan** (PA)	**Tegangan** (Mpa)	**Panjang mula-mula** (mm)	**Perpanjangan (ΔL)** (mm)	**Regangan** (€)	**Regangan** (%)	**Modulus Tarik** (GPa)	**Standar Deviasi Tegangan Tarik (Mpa)**	**Standar Deviasi Regangan Tarik (%)**	**Standar Deviasi Modulus Tarik (Gpa)**
TP	12,9	3,9	50,1	0,000050062	218,40	2141,78	42759126,48	42,76	50	2,12	0,04	4,24	1,02	1,19	0,51	0,10
2	11,9	4,2	49,8	0,000049822	238,89	2342,72	47011336,33	47,01	50	2,69	0,05	5,37	0,88	2,44	0,62	0,08
4	12,1	4,4	53,6	0,000053634	265,68	2605,42	48557302,33	48,56	50	2,82	0,06	5,63	0,89	4,24	1,41	0,15
6	11,9	4,4	52,8	0,000052776	229,99	2255,47	42739058,37	42,74	50	2,86	0,06	5,72	0,75	1,89	0,60	0,06
8	12,1	4,2	51,2	0,000051218	199,62	1957,56	38199267,06	38,20	50	2,49	0,05	4,97	0,78	3,05	1,02	0,09
10	12,0	4,3	51,3	0,000051290	209,06	2050,16	39979172,34	39,98	50	2,12	0,04	4,23	0,98	4,66	1,18	0,17
12	12,1	4,3	52,1	0,000052098	228,76	2243,39	43061971,77	43,06	50	2,43	0,05	4,85	0,89	1,24	0,32	0,04
14	12,1	4,3	52,4	0,000052444	205,89	2019,08	38498663,22	38,50	50	2,26	0,05	4,53	0,86	0,89	0,42	0,06

Tabel Lampiran 3 Hasil Uji tarik Komposit Tenunan Serat Rami 7,5% pigment pastes

Lama Perendaman	**Lebar** (mm)	**Tebal** (mm)	**Luas** (mm^2)	**Luas** (m^2)	**Beban** (Kg)	**Beban** (N)	**Tegangan** (PA)	**Tegangan** (Mpa)	**Panjang mula-mula** (mm)	**Perpanjangan (ΔL)** (mm)	**Regangan** (€)	**Regangan** (%)	**Modulus Tarik** (GPa)	**Standar Deviasi Tegangan Tarik (Mpa)**	**Standar Deviasi Regangan Tarik (%)**	**Standar Deviasi Modulus Tarik (Gpa)**
TP	12,0	4,2	50,0	0,000050006	217,24	2130,42	42625467,96	42,63	50	2,16	0,04	4,31	1,01	1,55	0,79	0,15
2	11,9	3,9	46,5	0,000046494	209,99	2059,32	44535083,35	44,54	50	2,35	0,05	4,71	0,96	4,48	0,59	0,20
4	11,7	3,8	44,6	0,000044614	209,03	2049,85	46014029,58	46,01	50	2,49	0,05	4,97	0,93	2,54	0,59	0,09
6	12,1	4,0	48,6	0,000048566	192,21	1884,93	38809019,67	38,81	50	2,35	0,05	4,70	0,84	2,01	0,67	0,08
8	11,9	4,1	48,2	0,00004815	216,92	2127,23	44215054,31	44,22	50	2,86	0,06	5,71	0,78	1,58	0,41	0,06
10	11,8	3,8	45,2	0,000045212	170,91	1676,07	36903715,20	36,90	50	1,78	0,04	3,55	1,13	6,56	1,56	0,27
12	11,8	3,7	44,3	0,000044276	179,69	1762,17	39822116,77	39,82	50	2,13	0,04	4,26	0,94	1,51	0,45	0,10
	12,0	3,9	46,5	0,00004648	184,02	1804,61	38898675,92	38,90	50	2,37	0,05	4,74	0,83	4,18	0,73	0,06

Tabel Lampiran 4 Hasil Uji tarik Komposit Tenunan Serat Rami 10% pigment pastes

Lama Perendaman	**Lebar** (mm)	**Tebal** (mm)	**Luas** (mm^2)	**Luas** (m^2)	**Beban** (Kg)	**Beban** (N)	**Tegangan** (PA)	**Tegangan** (Mpa)	**Panjang mula-mula** (mm)	**Perpanjangan (ΔL)** (mm)	**Regangan** (€)	**Regangan** (%)	**Modulus Tarik** (GPa)	**Standar Deviasi Tegangan Tarik (Mpa)**	**Standar Deviasi Regangan Tarik (%)**	**Standar Deviasi Modulus Tarik (Gpa)**
TP	12,0	4,1	49,2	0,0000492	221,38	2171,02	44126343,17	44,13	50	2,49	0,05	4,98	0,89	1,71	0,73	0,15
2	12,1	4,1	50,2	0,000050174	204,85	2008,86	40046082,43	40,05	50	2,26	0,05	4,53	0,91	4,15	1,15	0,14
4	11,9	4,0	47,6	0,0000476	202,04	1981,29	41623773,21	41,62	50	1,95	0,04	3,90	1,07	1,54	0,63	0,09
6	12,4	4,1	50,8	0,000050084	214,77	2106,17	41427384,37	41,43	50	3,03	0,06	6,06	0,68	1,67	0,35	0,08
8	12,1	4,0	48,4	0,0000484	212,72	2086,08	43100850,19	43,10	50	2,65	0,05	5,30	0,81	2,20	0,80	0,06
10	12,0	4,2	50,4	0,000050404	197,49	1936,69	38426290,54	38,43	50	2,47	0,05	4,94	0,78	1,49	0,30	0,02
12	12,0	4,1	49,2	0,0000492	208,67	2046,36	41592592,23	41,59	50	2,87	0,06	5,74	0,73	2,21	0,60	0,10
	11,8	4,1	48,2	0,0000481 6	194,62	1908,54	39698756,01	39,70	50	2,42	0,05	4,84	0,83	2,09	0,61	0,06

Tabel Lampiran 5 Hasil Uji tarik Bending Tenunan Serat Rami 0% pigment pastes

Lama perendaman	Nama Spesimen	Lebar (b=mm)	Tebal (mm)	Defleks (D) mm	Beban deflek si (Kg)	P (N)	σf (Mpa)	εf (mm/mm)	momen inersia(mm)	EB		STANDAR DEVIASI σf (Mpa)	STANDEAR DEVIASI εf (mm/mm)	STANDAR DEVIASI (Gpa)
										(Mpa)	(Gpa)			
0	TSR0-0	16,1	4,1	9,10	30,55	299,35	109,68	0,0526	90,14	2075,88	2,08	11,37	0,0032	0,21
2	TSR0-2	16,3	4,1	9,45	35,63	349,21	126,13	0,0543	92,24	2318,06	2,32	6,73	0,0024	0,11
4	TSR0-4	16,2	4,1	9,99	39,46	386,72	138,64	0,0566	95,60	2389,80	2,39	13,18	0,0013	0,19
6	TSR0-6	16,1	4,2	9,48	35,62	349,11	125,09	0,0533	98,26	2256,48	2,26	11,83	0,0040	0,16
8	TSR0-8	16,0	4,2	9,09	33,85	331,76	116,90	0,0505	102,87	2197,38	2,20	12,24	0,0043	0,19
10	TSR0-10	16,0	4,4	9,45	42,83	419,74	142,48	0,0501	115,17	2573,66	2,57	4,97	0,0002	0,09
12	TSR0-12	16,0	4,4	9,73	44,41	435,24	147,48	0,0516	115,55	2586,10	2,59	10,62	0,0022	0,16
14	TSR0-14	16,1	4,3	9,50	42,52	416,65	146,22	0,0523	103,50	2636,74	2,64	6,32	0,0018	0,10

Tabel Lampiran 6 Hasil Uji tarik Bending Tenunan Serat Rami 5% pigment pastes

Lama perendaman	No	Lebar (b=mm)	Tebal (mm)	Defleks (D) mm	Beban deflek si (Kg)	P (N)	σf (Mpa)	εf (mm/mm)	momen inersia(mm)	EB		STANDAR DEVIASI σf (Mpa)	STANDEAR DEVIASI εf (mm/mm)	STANDAR DEVIASI (Gpa)
										(Mpa)	(Gpa)			
0	TSR 5-0	16,1	3,9	9,17	25,76	252,48	95,79	0,0548	81,12	1798,30	1,80	19,16	0,0021	0,35
2	TSR 5-2	15,9	4,3	8,36	35,79	350,72	122,48	0,0455	107,05	2577,96	2,58	6,12	0,0084	0,68
4	TSR 5-4	16,1	4,3	9,30	45,32	444,18	154,68	0,0509	105,20	2852,24	2,85	12,57	0,0012	0,19
6	TSR 5-6	16,1	4,0	9,79	35,45	347,45	128,95	0,0571	87,19	2259,60	2,26	8,81	0,0029	0,07
8	TSR 5-8	16,1	4,2	9,93	38,40	376,35	133,31	0,0553	100,81	2298,63	2,30	8,45	0,0036	0,12
10	TSR 5-10	16,1	4,2	8,94	29,41	288,18	102,85	0,0501	97,89	1974,64	1,97	8,05	0,0021	0,17
12	TSR 5-12	16,1	4,0	9,95	38,02	372,56	137,67	0,0578	88,40	2372,71	2,37	5,19	0,0023	0,04
14	TSR 5-14	16,0	4,2	9,22	36,31	355,84	127,22	0,0515	99,11	2352,46	2,35	14,93	0,0032	0,19

Tabel Lampiran 7 Hasil Uji tarik Bending Tenunan Serat Rami 7,5% pigment pastes

Lama perendaman	No	Lebar (b=mm)	Tebal (mm)	Defleks (D) mm	Beban defleksi (Kg)	P (N)	σf (Mpa)	εf (mm/mm)	momen inersia(mm)	EB		STANDAR DEVIASI σf (Mpa)	STANDEAR DEVIASI εf (mm/mm)	STANDAR DEVIASI (Gpa)
										(Mpa)	(Gpa)			
0	TSR75-0	16,18	4,32	9,81	50,81	497,89	170,83	0,0532	108,79	3002,43	3,00	14,13	0,0013	0,20
2	TSR75-2	16,18	4,22	8,50	31,60	309,70	108,87	0,0472	101,53	2213,59	2,21	3,14	0,0025	0,09
4	TSR75-4	15,96	4,14	9,65	39,63	388,41	141,16	0,0546	94,40	2487,45	2,49	11,94	0,0028	0,12
6	TSR75-6	16,06	3,98	9,96	34,20	335,12	125,35	0,0587	84,77	2149,47	2,15	16,57	0,0022	0,20
8	TSR75-8	16,00	4,24	9,87	41,16	403,36	142,32	0,0547	102,37	2458,84	2,46	9,94	0,0022	0,13
10	TSR75-10	15,76	4,06	8,99	27,07	265,26	99,39	0,0520	88,48	1859,21	1,86	5,06	0,0035	0,09
12	TSR75-12	16,08	4,26	9,81	37,99	372,35	130,41	0,0540	103,69	2280,20	2,28	5,13	0,0013	0,10
14	TSR75-14	15,92	3,92	9,13	28,08	275,18	105,88	0,0547	80,31	1967,71	1,97	6,65	0,0040	0,07

Tabel Lampiran 8 Hasil Uji tarik Bending Tenunan Serat Rami 10% pigment pastes

Lama perendaman	No	Lebar (b=mm)	Tebal (mm)	Defleks (D) mm	Beban defleksi (Kg)	P (N)	σf (Mpa)	εf (mm/mm)	momen inersia(mm)	EB		STANDAR DEVIASI σf (Mpa)	STANDEAR DEVIASI εf (mm/mm)	STANDAR DEVIASI (Gpa)
										(Mpa)	(Gpa)			
0	TSR10-0	16,04	4,30	9,54	39,93	391,31	136,16	0,0521	106,91	2440,96	2,44	4,98	0,0024	0,04
2	TSR10-2	16,04	4,26	8,28	28,24	276,74	97,24	0,0455	103,48	1999,75	2,00	15,48	0,0019	0,22
4	TSR10-4	15,86	3,88	9,45	32,73	320,73	125,20	0,0571	77,30	2235,84	2,24	14,76	0,0027	0,18
6	TSR10-6	16,02	4,34	10,03	45,94	450,19	155,19	0,0543	109,63	2644,19	2,64	9,88	0,0034	0,17
8	TSR10-8	16,04	4,12	8,99	34,93	342,28	124,14	0,0512	93,73	2360,66	2,36	10,96	0,0025	0,14
10	TSR10-10	16,06	4,18	9,17	31,65	310,21	111,02	0,0515	97,78	2072,27	2,07	12,04	0,0035	0,17
12	TSR10-12	16,10	4,02	9,81	36,91	361,71	134,18	0,0572	87,24	2354,10	2,35	9,36	0,0017	0,23
14	TSR10-14	15,98	4,06	9,30	33,75	330,71	122,24	0,0538	89,43	2241,77	2,24	7,34	0,0030	0,14

Tabel Lampiran 9 Hasil Uji daya serap air

Nama Sampel Uji	TSR0		TSR5		TSR75		TSR10	
HARI	After water Wt (gms)	Water gain (%)	After water Wt (gms)	Water gain (%)	After water Wt (gms)	Water gain (%)	After water Wt (gms)	Water gain (%)
0	300,78	0,00	323,59	0,00	312,44	0,00	325,18	0,00
7	307,01	2,07	326,09	0,77	315,22	0,89	328,10	0,90
14	308,59	2,60	327,14	1,10	316,59	1,33	329,09	1,20
21	309,82	3,01	328,44	1,50	317,88	1,74	330,27	1,57
28	310,56	3,25	329,18	1,73	318,81	2,04	331,14	1,83
35	312,83	4,01	330,98	2,28	320,80	2,68	332,69	2,31
42	312,26	3,82	330,72	2,20	320,28	2,51	332,45	2,24
49	313,07	4,09	331,57	2,47	321,40	2,87	333,72	2,63
56	313,55	4,25	332,07	2,62	321,73	2,97	333,97	2,70
63	314,11	4,43	332,82	2,85	322,35	3,17	334,45	2,85
70	314,64	4,61	333,20	2,97	322,72	3,29	335,10	3,05
77	315,01	4,73	333,24	2,98	323,22	3,45	335,34	3,12
84	315,57	4,92	334,06	3,24	323,78	3,63	335,80	3,27
91	315,78	4,99	334,42	3,35	324,15	3,75	336,03	3,34
98	316,33	5,17	335,17	3,58	324,50	3,86	336,91	3,61

LAMPIRAN II

A. SPESIMEN UJI TARIK

B. SPESIMEN UJI BENDING

FOTO SPESIMEN UJI TARIK SEBELUM PENGUJIAN

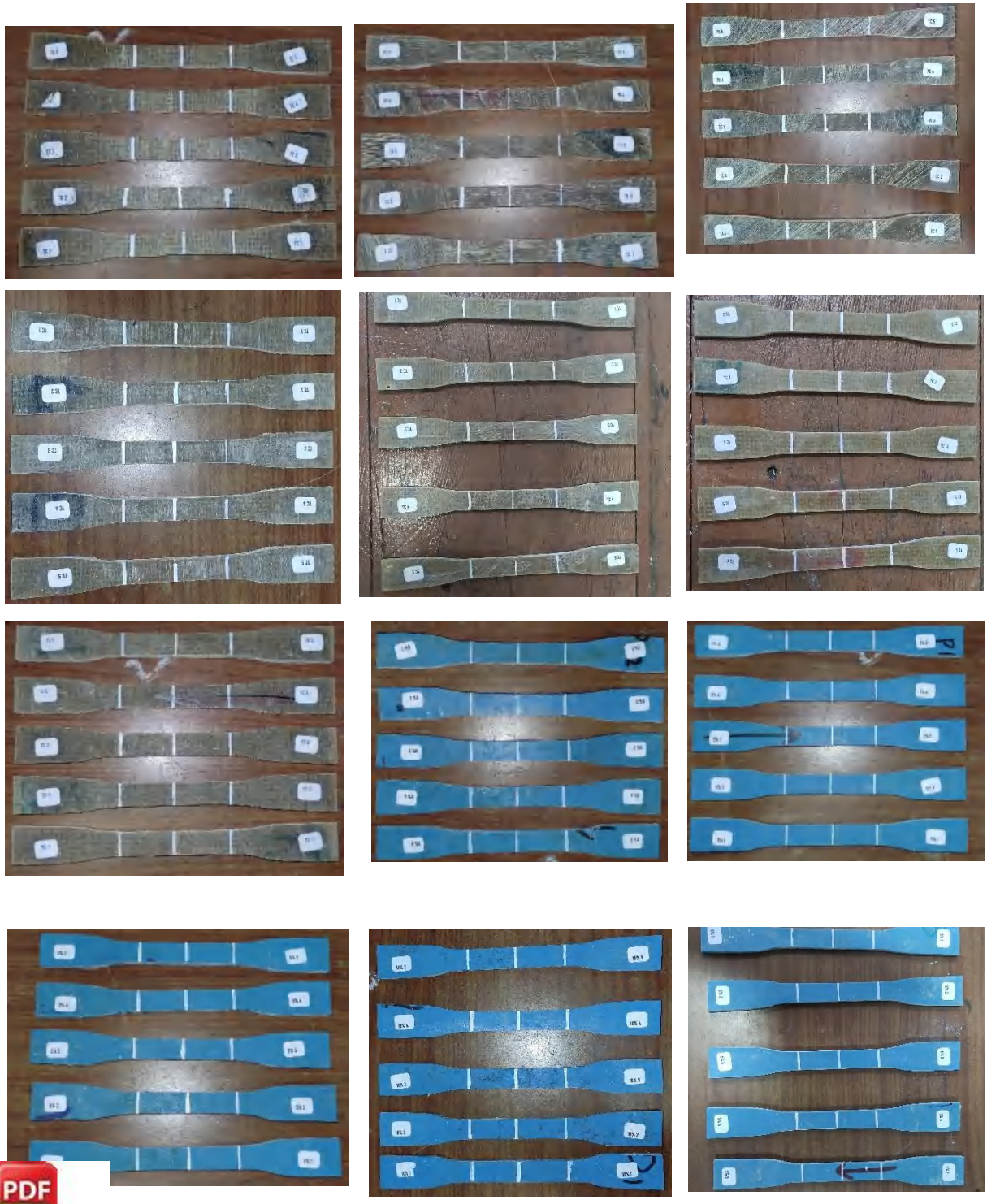
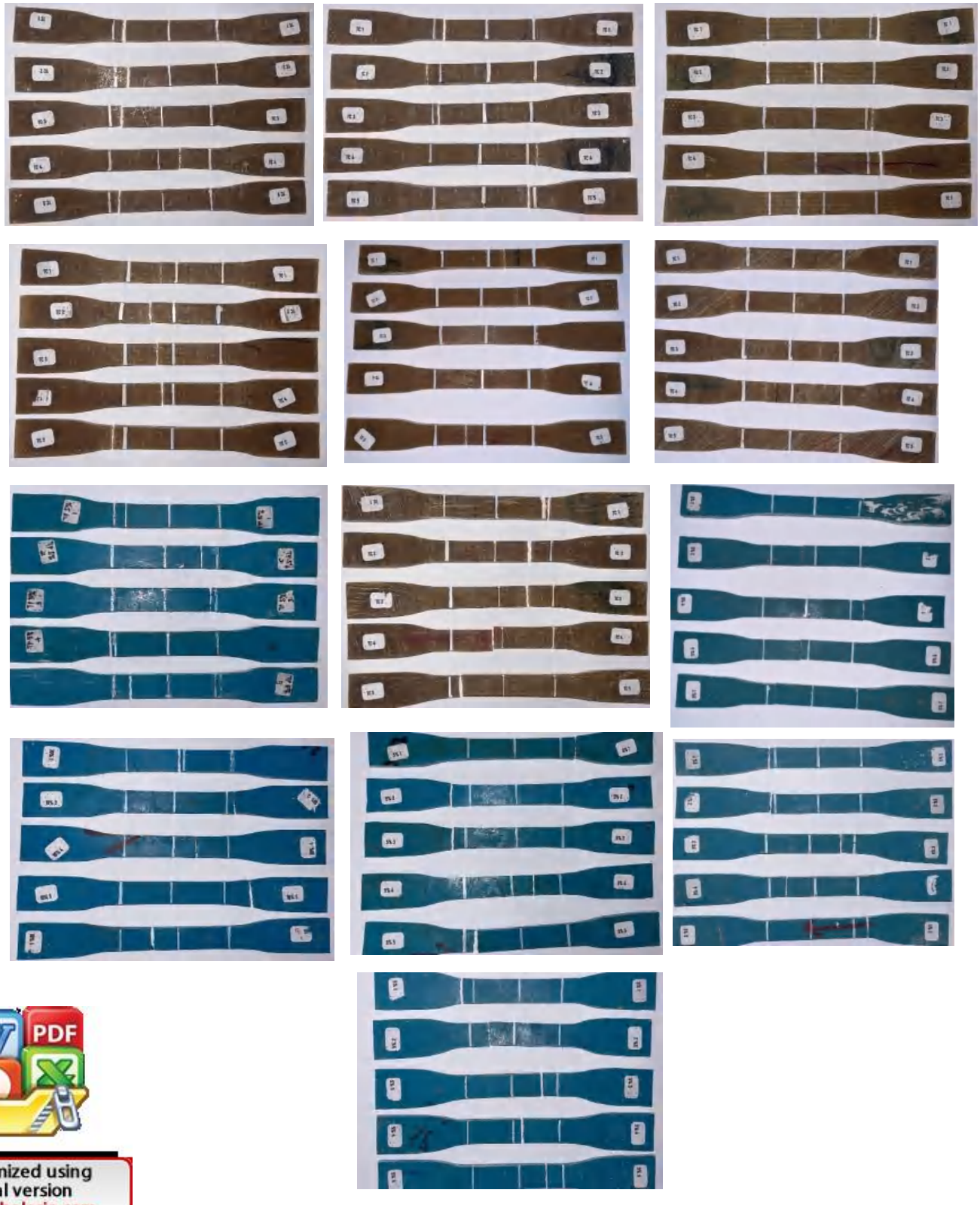


FOTO SPESIIMEN UJI TARIK SETELAH PENGUJIAN



LAMPIRAN III

A. STANDAR ASTM D790 DAN ASTM D638

B. HASIL UJI FTIR

C.HASIL UJI SEM

Designation: D 790 – 02

Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials[1]

This standard is issued under the fixed designation D 790; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 These test methods cover the determination of flexural properties of unreinforced and reinforced plastics, including high-modulus composites and electrical insulating materials in the form of rectangular bars molded directly or cut from sheets, plates, or molded shapes. These test methods are generally applicable to both rigid and semirigid materials. However, flexural strength cannot be determined for those materials that do not break or that do not fail in the outer surface of the test specimen within the 5.0 % strain limit of these test methods. These test methods utilize a three-point loading system applied to a simply supported beam. A four-point loading system method can be found in Test Method D 6272.

1.1.1 *Procedure A*, designed principally for materials that break at comparatively small deflections.

1.1.2 *Procedure B*, designed particularly for those materials that undergo large deflections during testing.

1.1.3 Procedure A shall be used for measurement of flexural properties, particularly flexural modulus, unless the material specification states otherwise. Procedure B may be used for measurement of flexural strength only. Tangent modulus data obtained by Procedure A tends to exhibit lower standard deviations than comparable data obtained by means of Procedure B.

1.2 Comparative tests may be run in accordance with either procedure, provided that the procedure is found satisfactory for the material being tested.

1.3 The values stated in SI units are to be regarded as the standard. The values provided in parentheses are for information only.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—These test methods are not technically equivalent to ISO 178.

2. Referenced Documents

2.1 *ASTM Standards:*

D 618 Practice for Conditioning Plastics for Testing[2]
D 638 Test Method for Tensile Properties of Plastics[2]
D 883 Terminology Relating to Plastics[2]
D 4000 Classification System for Specifying Plastic Materials[3]
D 5947 Test Methods for Physical Dimensions of Solid Plastic Specimens[4]
D 6272 Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials by Four-Point Bending[4]
E 4 Practices for Force Verification of Testing Machines[5]
E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method[6]

3. Terminology

3.1 *Definitions*—Definitions of terms applying to these test methods appear in Terminology D 883 and Annex A1 of Test Method D 638.

4. Summary of Test Method

4.1 A bar of rectangular cross section rests on two supports and is loaded by means of a loading nose midway between the supports (see Fig. 1). A support span-to-depth ratio of 16:1 shall be used unless there is reason to suspect that a larger span-to-depth ratio may be required, as may be the case for certain laminated materials (see Section 7 and Note 8 for guidance).

4.2 The specimen is deflected until rupture occurs in the outer surface of the test specimen or until a maximum strain (see 12.7) of 5.0 % is reached, whichever occurs first.

4.3 Procedure A employs a strain rate of 0.01 mm/mm/min (0.01 in./in./min) and is the preferred procedure for this test method, while Procedure B employs a strain rate of 0.10 mm/mm/min (0.10 in./in./min).

[1] These test methods are under the jurisdiction of ASTM Committee D20 on Plastics and are the direct responsibility of Subcommittee D20.10 on Mechanical Properties.

Current edition approved April 10, 2002. Published June 2002. Originally published as D 790 – 70. Last previous edition D 790 – 00.

[2] *Annual Book of ASTM Standards*, Vol 08.01.
[3] *Annual Book of ASTM Standards*, Vol 08.02.
[4] *Annual Book of ASTM Standards*, Vol 08.03.
[5] *Annual Book of ASTM Standards*, Vol 03.01.
[6] *Annual Book of ASTM Standards*, Vol 14.02.

***A Summary of Changes section appears at the end of this standard.**

mational, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.

Designation: D 638 – 02a

Standard Test Method for Tensile Properties of Plastics[1]

This standard is issued under the fixed designation D 638; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This test method covers the determination of the tensile properties of unreinforced and reinforced plastics in the form of standard dumbbell-shaped test specimens when tested under defined conditions of pretreatment, temperature, humidity, and testing machine speed.

1.2 This test method can be used for testing materials of any thickness up to 14 mm (0.55 in.). However, for testing specimens in the form of thin sheeting, including film less than 1.0 mm (0.04 in.) in thickness, Test Methods D 882 is the preferred test method. Materials with a thickness greater than 14 mm (0.55 in.) must be reduced by machining.

1.3 This test method includes the option of determining Poisson's ratio at room temperature.

NOTE 1—This test method and ISO 527-1 are technically equivalent.

NOTE 2—This test method is not intended to cover precise physical procedures. It is recognized that the constant rate of crosshead movement type of test leaves much to be desired from a theoretical standpoint, that wide differences may exist between rate of crosshead movement and rate of strain between gage marks on the specimen, and that the testing speeds specified disguise important effects characteristic of materials in the plastic state. Further, it is realized that variations in the thicknesses of test specimens, which are permitted by these procedures, produce variations in the surface-volume ratios of such specimens, and that these variations may influence the test results. Hence, where directly comparable results are desired, all samples should be of equal thickness. Special additional tests should be used where more precise physical data are needed.

NOTE 3—This test method may be used for testing phenolic molded resin or laminated materials. However, where these materials are used as electrical insulation, such materials should be tested in accordance with Test Methods D 229 and Test Method D 651.

NOTE 4—For tensile properties of resin-matrix composites reinforced with oriented continuous or discontinuous high modulus >20-GPa (>3.0 × 10^6-psi) fibers, tests shall be made in accordance with Test Method D 3039/D 3039M.

1.4 Test data obtained by this test method are relevant and appropriate for use in engineering design.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 229 Test Methods for Rigid Sheet and Plate Materials Used for Electrical Insulation[2]

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension[3]

D 618 Practice for Conditioning Plastics for Testing[4]

D 651 Test Method for Tensile Strength of Molded Electrical Insulating Materials[5]

D 882 Test Methods for Tensile Properties of Thin Plastic Sheeting[4]

D 883 Terminology Relating to Plastics[4]

D 1822 Test Method for Tensile-Impact Energy to Break Plastics and Electrical Insulating Materials[4]

D 3039/D 3039M Test Method for Tensile Properties of Polymer Matrix Composite Materials[6]

D 4000 Classification System for Specifying Plastic Materials[7]

D 4066 Classification System for Nylon Injection and Extrusion Materials[7]

D 5947 Test Methods for Physical Dimensions of Solid Plastic Specimens[8]

E 4 Practices for Force Verification of Testing Machines[9]

E 83 Practice for Verification and Classification of Extensometer[9]

E 132 Test Method for Poisson's Ratio at Room Temperature[9]

E 691 Practice for Conducting an Interlaboratory Study to

[1] This test method is under the jurisdiction of ASTM Committee D20 on Plastics ... onsibility of Subcommittee D20.10 on Mechanical Properties. ... proved November 10, 2002. Published January 2003. Originally ... 41. Last previous edition approved in 2002 as D 638 – 02.

[2] *Annual Book of ASTM Standards*, Vol 10.01.
[3] *Annual Book of ASTM Standards*, Vol 09.01.
[4] *Annual Book of ASTM Standards*, Vol 08.01.
[5] Discontinued; see *1994 Annual Book of ASTM Standards*, Vol 10.01.
[6] *Annual Book of ASTM Standards*, Vol 15.03.
[7] *Annual Book of ASTM Standards*, Vol 08.02.
[8] *Annual Book of ASTM Standards*, Vol 08.03.
[9] *Annual Book of ASTM Standards*, Vol 03.01.

***A Summary of Changes section appears at the end of this standard.**

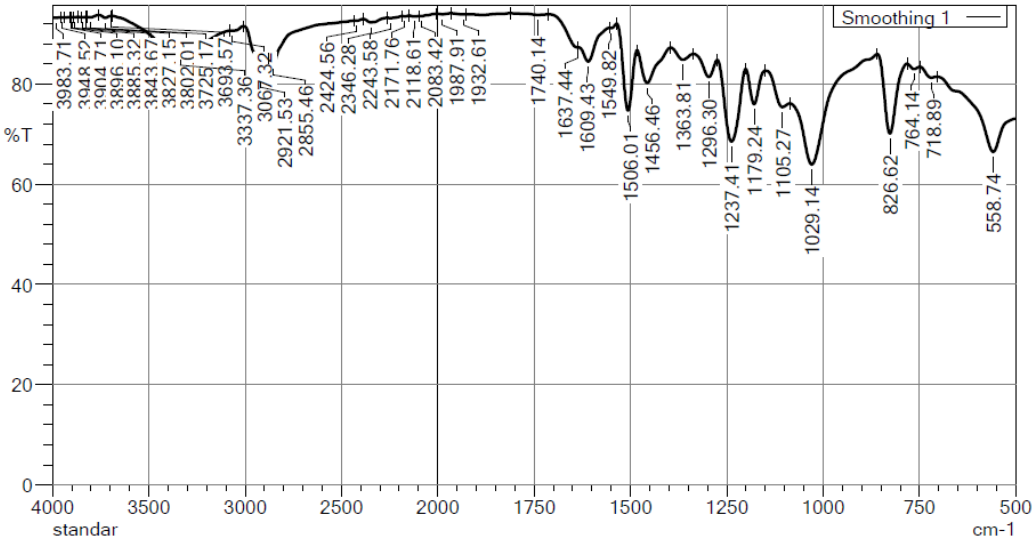
... national, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.

FTIR TSR0-0

Peak Pick

Date: 26/04/2024 09:56:41
System Administrator

File name: D:\240426 - Z Djafar1.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

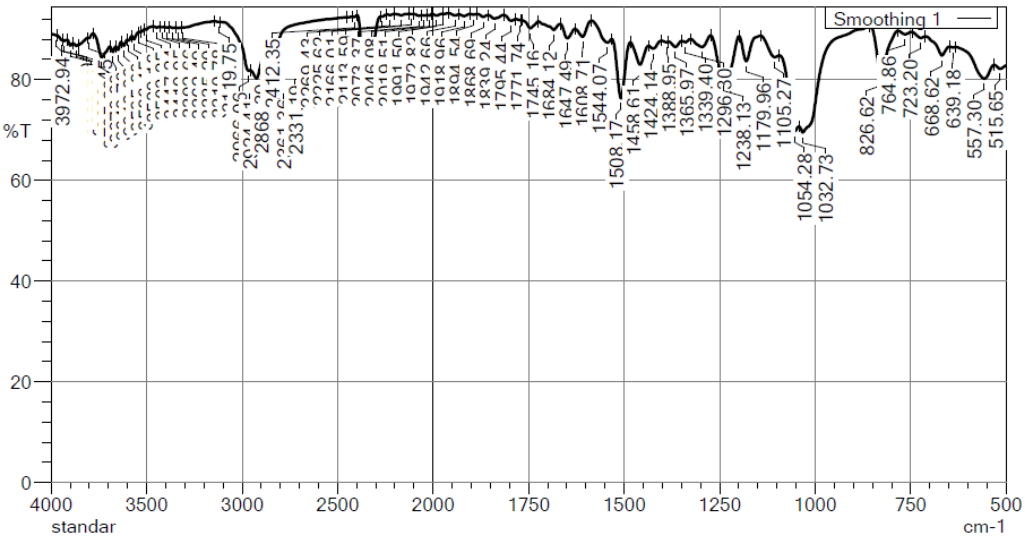
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.74	66.45	9.02	705.25	499.85	5194.269	522.281	
2	718.89	81.24	0.80	749.06	705.25	789.295	18.930	
3	764.14	82.95	0.74	782.09	749.06	551.016	12.942	
4	826.62	70.10	15.02	859.65	782.09	1656.352	491.215	
5	1029.14	63.93	14.66	1086.60	859.65	5145.036	837.912	
6	1105.27	75.38	2.65	1149.80	1086.60	1372.107	67.567	
7	1179.24	75.99	6.83	1200.79	1149.80	1039.181	161.367	
8	1237.41	68.52	15.33	1274.76	1200.79	1796.044	601.493	
9	1296.30	81.39	3.79	1336.52	1274.76	1008.222	104.347	
10	1363.81	84.83	1.73	1395.41	1336.52	840.490	51.488	
11	1456.46	80.21	6.64	1483.03	1395.41	1417.776	274.616	
12	1506.01	74.68	14.31	1536.17	1483.03	923.468	357.393	
13	1549.82	91.12	0.27	1554.85	1536.17	160.688	3.585	
14	1609.43	84.47	4.09	1636.00	1554.85	986.717	112.607	

Lampiran 1 TSR0-2

Peak Pick

Date: 25/04/2024 09:35:11
System Administrator

File name: D:\240425 - Z Djafar23.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

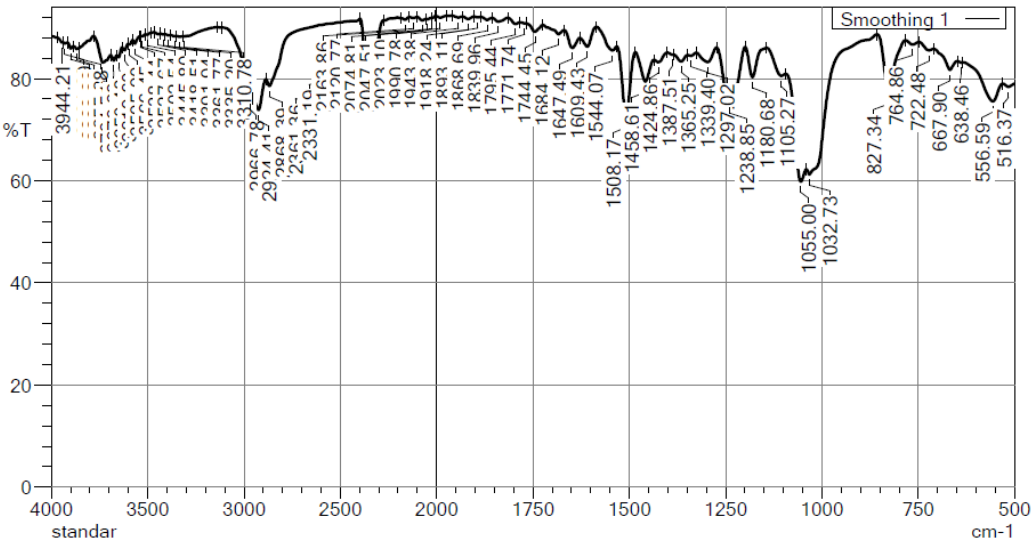
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	515.65	82.17	0.74	531.45	499.85	552.321	12.223	
2	557.30	80.22	3.62	631.99	531.45	1670.621	132.856	
3	639.18	86.36	0.15	647.79	631.99	214.083	1.068	
4	668.62	84.78	2.44	710.99	647.79	840.033	54.725	
5	723.20	88.32	0.58	746.90	710.99	404.434	10.877	
6	764.86	89.02	0.58	783.53	746.90	391.646	10.785	
7	826.62	80.98	9.29	858.22	783.53	1014.325	282.270	
8	1032.73	69.52	2.18	1042.07	858.22	2998.280	-553.725	
9	1054.28	69.75	4.27	1093.78	1042.07	1213.159	62.659	
10	1105.27	84.48	1.24	1143.33	1093.78	686.259	30.214	
11	1179.96	83.70	4.96	1199.35	1143.33	739.291	104.570	
12	1238.13	79.90	8.81	1274.04	1199.35	1211.189	367.488	
13	1296.30	86.51	1.97	1325.75	1274.04	654.659	56.181	
14	1339.40	87.43	0.42	1349.45	1325.75	291.786	4.500	

Lampiran 2 TSR0-4

Peak Pick

Date: 25/04/2024 09:39:16
System Administrator

File name: D:\240425 - Z Djafar24.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

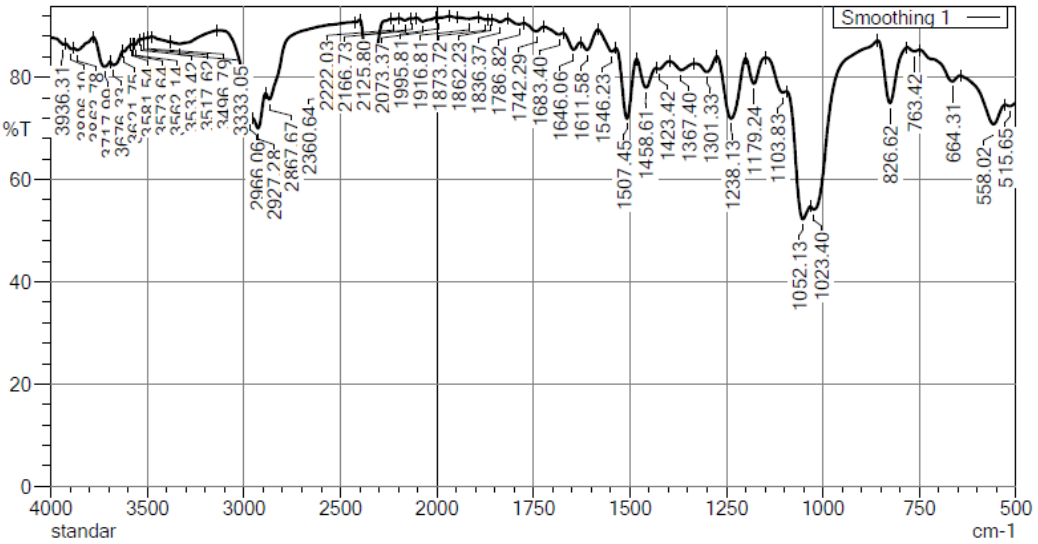
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	516.37	78.42	0.64	530.73	499.85	657.110	10.511	
2	556.59	75.58	4.50	634.15	530.73	2119.714	167.676	
3	638.46	83.15	0.12	648.51	634.15	240.416	0.849	
4	667.90	81.74	2.44	710.27	648.51	1002.155	53.076	
5	722.48	85.57	0.70	748.34	710.27	526.756	13.398	
6	764.86	86.71	0.63	783.53	748.34	456.715	11.634	
7	827.34	77.18	11.03	857.50	783.53	1208.870	329.165	
8	1032.73	61.22	2.15	1040.63	857.50	3728.275	-764.763	
9	1055.00	59.84	7.45	1093.78	1040.63	1640.139	130.233	
10	1105.27	80.57	1.54	1144.05	1093.78	867.089	37.122	
11	1180.68	80.33	5.84	1199.35	1144.05	890.567	123.900	
12	1238.85	75.35	10.82	1274.04	1199.35	1480.595	447.445	
13	1297.02	83.27	2.39	1326.47	1274.04	823.915	68.788	
14	1339.40	84.46	0.35	1348.01	1326.47	329.823	3.603	

Lampiran 3 TSR0-6

Peak Pick

Date: 25/04/2024 09:42:49
System Administrator

File name: D:\240425 - Z Djafar25.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

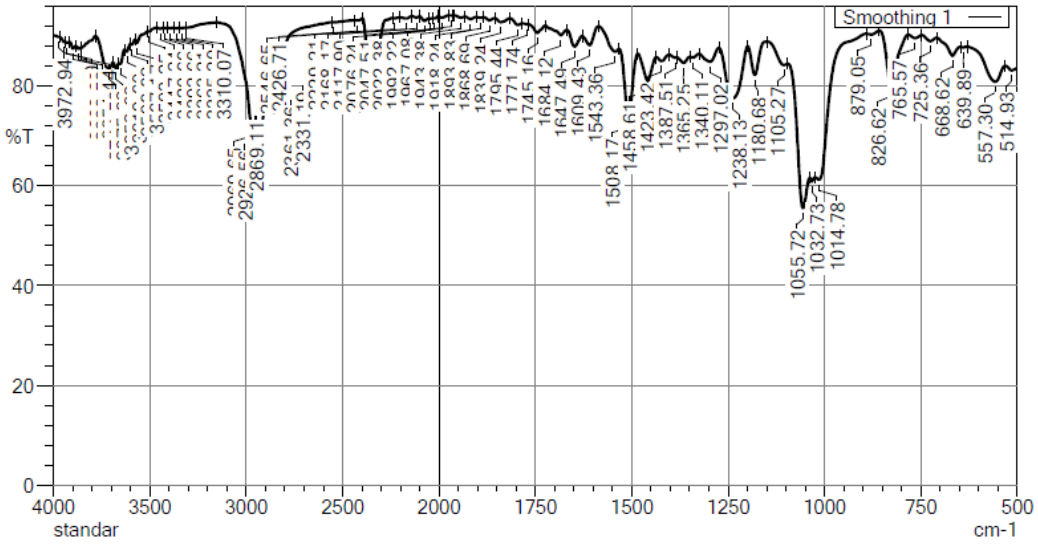
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	515.65	74.38	0.42	527.86	499.85	712.184	6.905	
2	558.02	70.85	5.26	644.20	527.86	2819.272	199.638	
3	664.31	79.21	2.08	749.77	644.20	1877.560	66.716	
4	763.42	85.08	0.48	782.09	749.77	473.623	8.275	
5	826.62	74.99	11.63	858.22	782.09	1405.181	378.734	
6	1023.40	54.18	2.29	1032.73	858.22	4055.881	-1012.598	
7	1052.13	52.25	9.55	1094.50	1032.73	2355.206	254.613	
8	1103.83	77.04	1.34	1149.08	1094.50	1083.750	21.599	
9	1179.24	78.76	4.98	1200.07	1149.08	945.049	116.939	
10	1238.13	71.94	11.93	1274.76	1200.07	1678.985	474.575	
11	1301.33	81.04	2.40	1335.09	1274.76	1073.318	69.570	
12	1367.40	81.40	1.50	1396.85	1335.09	1100.887	44.199	
13	1423.42	81.58	0.55	1432.76	1396.85	637.073	7.045	
14	1458.61	78.03	4.68	1482.31	1432.76	979.364	120.560	

Lampiran 4 TSR0-8

Peak Pick

Date: 25/04/2024 09:46:41
System Administrator

File name: D:\240425 - Z Djafar26.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

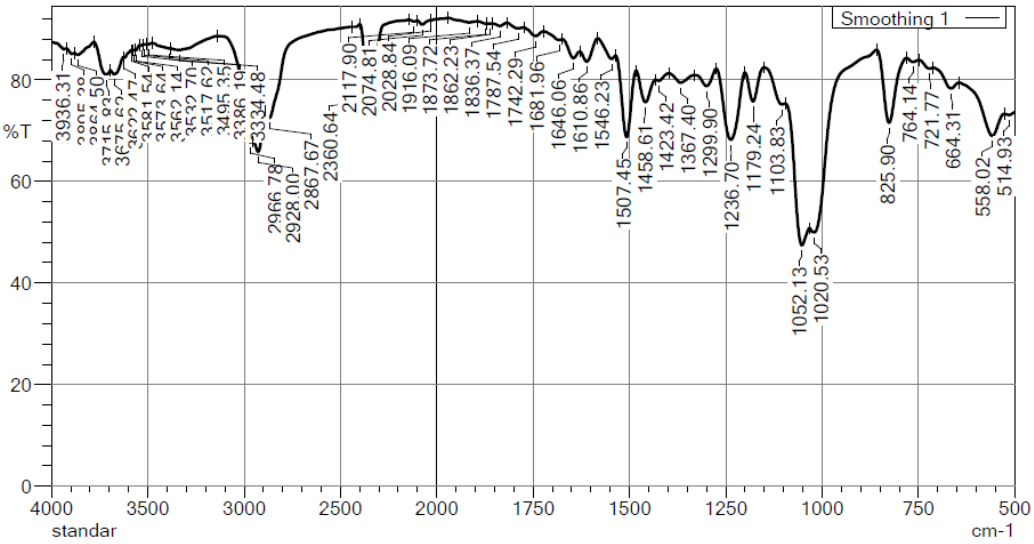
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	514.93	83.11	0.67	530.73	499.85	511.795	11.130	
2	557.30	80.80	4.22	630.56	530.73	1562.367	156.678	
3	639.89	87.65	0.16	647.79	630.56	211.165	1.144	
4	668.62	85.98	2.42	709.56	647.79	753.773	55.659	
5	725.36	88.96	0.87	747.62	709.56	402.380	16.715	
6	765.57	89.54	0.64	782.81	747.62	357.319	11.735	
7	826.62	80.08	10.62	858.22	782.81	1031.641	325.794	
8	879.05	90.28	0.37	891.97	858.22	320.275	7.173	
9	1014.78	61.22	2.61	1024.83	891.97	2438.338	-746.806	
10	1032.73	60.84	0.75	1038.48	1024.83	528.535	4.441	
11	1055.72	55.52	12.96	1095.22	1038.48	1791.455	257.822	
12	1105.27	84.15	1.09	1148.36	1095.22	732.618	20.866	
13	1180.68	82.21	6.02	1199.35	1148.36	712.066	117.980	
14	1238.13	77.50	10.23	1274.04	1199.35	1352.495	436.460	

Lampiran 5 TSR0-10

Peak Pick

Date: 25/04/2024 09:50:28
System Administrator

File name: D:\240425 - Z Djafar27.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

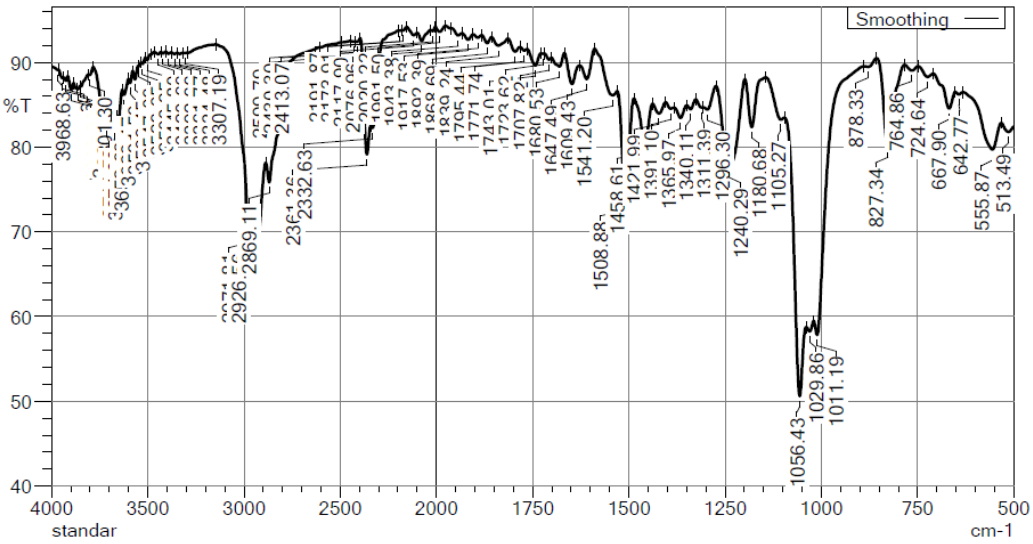
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	514.93	73.11	0.37	527.14	499.85	729.224	5.963	
2	558.02	69.01	5.93	644.20	527.14	2982.142	218.317	
3	664.31	78.34	2.01	710.99	644.20	1329.564	55.557	
4	721.77	82.25	0.58	749.06	710.99	651.946	11.038	
5	764.14	83.52	0.59	781.37	749.06	523.063	10.101	
6	825.90	71.58	13.66	858.94	781.37	1607.283	453.115	
7	1020.53	49.98	3.28	1032.73	858.94	4389.206	-1111.022	
8	1052.13	47.45	10.87	1095.93	1032.73	2622.536	287.993	
9	1103.83	75.17	1.19	1150.52	1095.93	1171.227	19.036	
10	1179.24	75.78	6.09	1200.07	1150.52	1034.541	140.004	
11	1236.70	68.23	13.59	1274.76	1200.07	1904.154	547.008	
12	1299.90	78.81	2.82	1330.78	1274.76	1110.065	77.600	
13	1367.40	79.45	1.68	1397.57	1330.78	1313.382	51.862	
14	1423.42	79.82	0.55	1432.76	1397.57	687.823	7.337	

Lampiran 6 TSR0-12

Peak Pick

Date: 25/04/2024 09:54:14
System Administrator

File name: D:\240425 - Z Djafar28.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

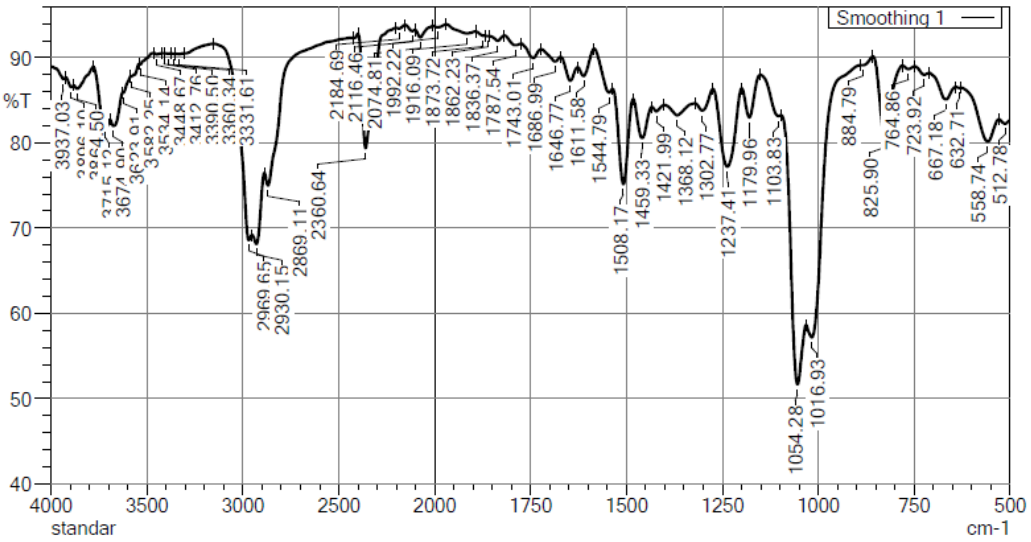
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	513.49	81.80	0.81	532.89	499.85	588.635	15.342	
2	555.87	79.73	3.96	631.99	532.89	1666.028	146.195	
3	642.77	86.23	0.27	652.10	631.99	274.117	2.675	
4	667.90	84.57	2.55	709.56	652.10	769.144	56.630	
5	724.64	88.30	0.70	748.34	709.56	436.042	13.393	
6	764.86	89.04	0.58	784.25	748.34	383.290	10.792	
7	827.34	80.08	10.11	856.78	784.25	1007.068	289.776	
8	878.33	89.47	0.39	889.10	856.78	329.954	7.607	
9	1011.19	57.85	3.63	1019.81	889.10	2474.598	-855.809	
10	1029.86	58.27	0.84	1039.20	1019.81	801.143	8.555	
11	1056.43	50.63	15.64	1095.93	1039.20	1916.425	277.448	
12	1105.27	83.26	1.12	1144.77	1095.93	713.074	21.983	
13	1180.68	82.38	5.70	1198.63	1144.77	750.657	110.605	
14	1240.29	77.73	9.83	1274.04	1198.63	1356.381	421.396	

Lampiran 7 TSR0-14

Peak Pick

Date: 25/04/2024 09:58:18
System Administrator

File name: D:\240425 - Z Djafar29.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

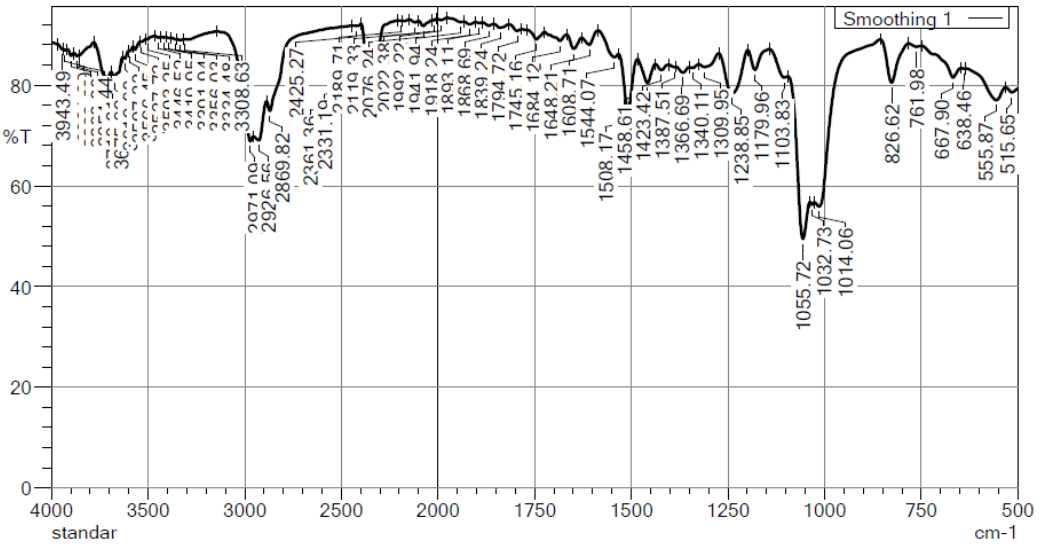
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	512.78	82.26	0.49	529.29	499.85	515.872	8.004	
2	558.74	80.18	3.69	629.12	529.29	1670.684	137.083	
3	632.71	86.45	0.07	641.33	629.12	164.814	0.400	
4	667.18	85.14	2.05	710.27	641.33	931.936	62.486	
5	723.92	88.01	0.49	748.34	710.27	442.917	9.164	
6	764.86	88.68	0.36	780.66	748.34	360.424	6.068	
7	825.90	80.77	8.93	858.22	780.66	1101.542	295.751	
8	884.79	89.13	0.15	889.10	858.22	325.207	5.331	
9	1016.93	57.20	4.65	1032.02	889.10	3037.855	-694.582	
10	1054.28	51.69	15.33	1097.37	1032.02	2301.507	402.175	
11	1103.83	83.18	0.64	1151.23	1097.37	783.030	8.323	
12	1179.96	83.02	4.03	1200.07	1151.23	716.539	91.173	
13	1237.41	77.24	9.13	1274.76	1200.07	1390.332	372.098	
14	1302.77	83.80	1.55	1322.16	1274.76	728.230	40.783	

Lampiran 8 TSR5-0

Peak Pick

Date: 25/04/2024 10:02:39
System Administrator

File name: D:\240425 - Z Djafar30.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

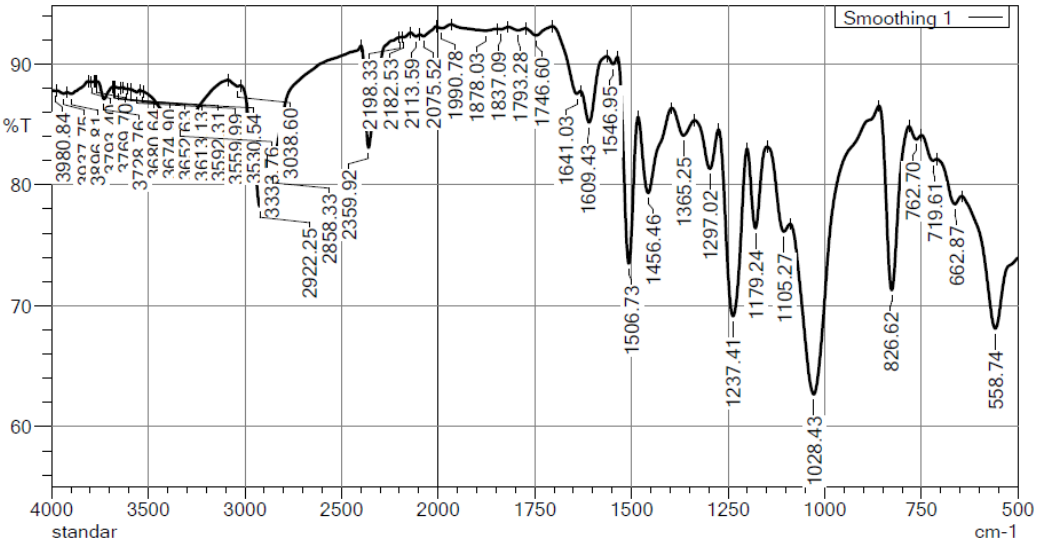
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	515.65	78.60	0.86	532.17	499.85	677.989	14.287	
2	555.87	77.04	3.39	634.15	532.17	2016.575	124.041	
3	638.46	83.27	0.09	646.36	634.15	203.524	0.496	
4	667.90	81.53	2.80	749.06	646.36	1555.718	77.776	
5	761.98	87.66	0.34	782.81	749.06	409.573	6.333	
6	826.62	80.53	8.25	856.06	782.81	1077.231	249.682	
7	1014.06	55.94	3.11	1026.27	856.06	3442.117	-1167.395	
8	1032.73	56.27	0.50	1037.76	1026.27	499.440	2.620	
9	1055.72	49.50	15.11	1095.22	1037.76	2083.490	318.742	
10	1103.83	81.52	1.22	1143.33	1095.22	772.864	25.781	
11	1179.96	83.08	3.97	1198.63	1143.33	800.870	86.425	
12	1238.85	78.40	8.24	1274.04	1198.63	1352.010	345.792	
13	1309.95	83.61	1.23	1325.75	1274.04	807.567	45.090	
14	1340.11	83.44	0.39	1350.17	1325.75	398.077	4.527	

Lampiran 9 TSR5-2

Peak Pick

Date: 25/04/2024 08:40:48
System Administrator

File name: D:\240425 - Z Djafar9.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

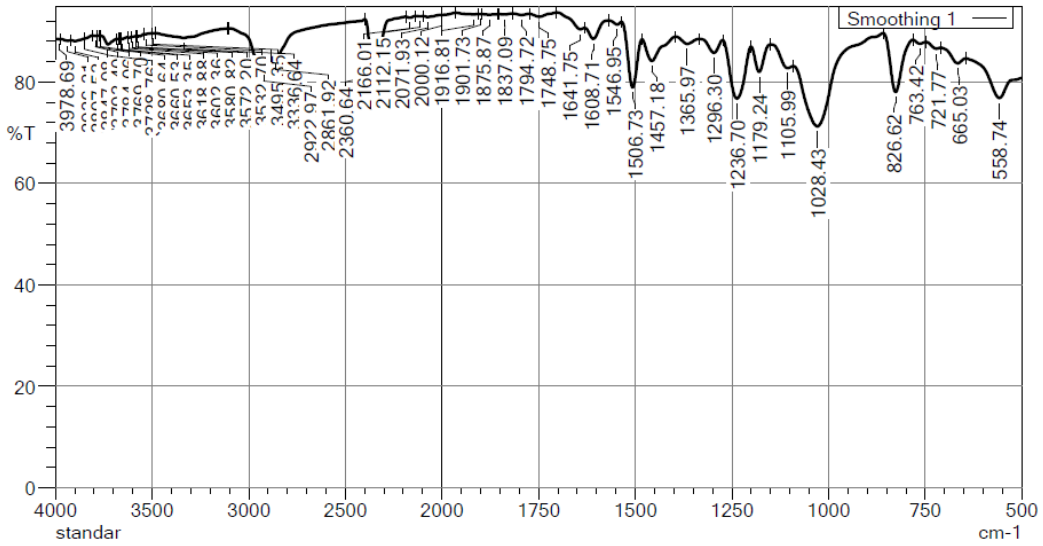
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.74	68.12	7.92	645.64	499.85	3816.200	394.096	
2	662.87	78.41	1.49	709.56	645.64	1276.257	36.398	
3	719.61	82.02	0.61	749.77	709.56	692.157	13.236	
4	762.70	83.77	0.63	782.09	749.77	512.979	11.096	
5	826.62	71.30	14.51	859.65	782.09	1589.367	479.045	
6	1028.43	62.69	16.67	1089.47	859.65	5319.320	1101.018	
7	1105.27	76.15	2.31	1149.08	1089.47	1250.643	55.799	
8	1179.24	76.43	6.62	1200.79	1149.08	1031.695	155.801	
9	1237.41	69.15	14.61	1274.76	1200.79	1777.716	577.155	
10	1297.02	81.34	3.50	1336.52	1274.76	1025.392	96.029	
11	1365.25	84.09	1.75	1395.41	1336.52	884.449	50.990	
12	1456.46	79.35	6.49	1483.03	1395.41	1495.602	267.172	
13	1506.73	73.49	14.33	1536.17	1483.03	993.359	360.370	
14	1546.95	90.00	0.60	1564.18	1536.17	271.303	8.057	

Lampiran 10 TSR5-4

Peak Pick

Date: 25/04/2024 08:45:20
System Administrator

File name: D:\240425 - Z Djafar10.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

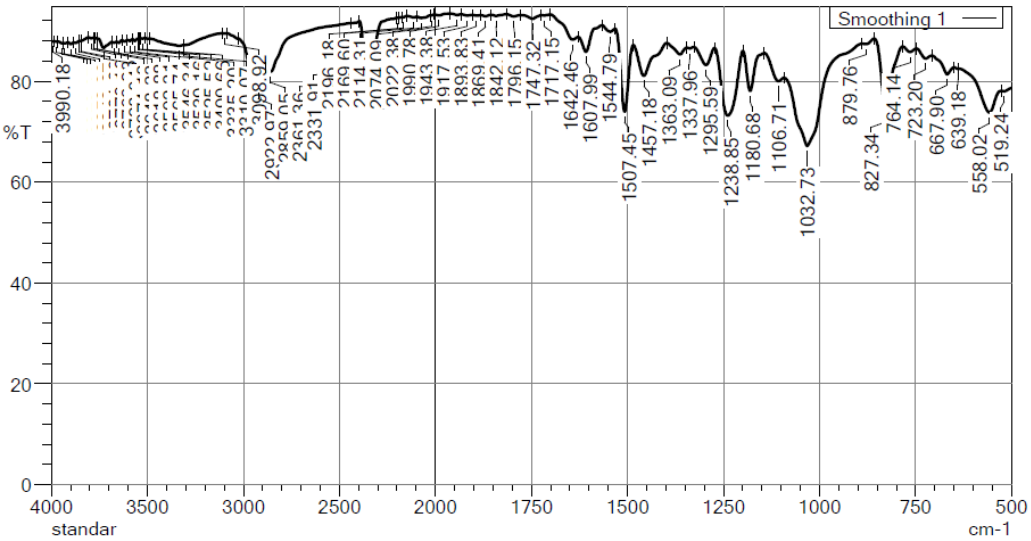
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.74	76.84	5.51	644.20	499.85	2755.313	258.514	
2	665.03	83.68	1.61	709.56	644.20	979.239	43.189	
3	721.77	86.57	0.53	748.34	709.56	502.490	10.263	
4	763.42	87.51	0.55	782.09	748.34	412.083	9.914	
5	826.62	78.02	11.02	858.94	782.09	1209.822	359.873	
6	1028.43	71.23	13.62	1090.91	858.94	4115.608	947.771	
7	1105.99	82.72	1.48	1149.80	1090.91	900.959	31.602	
8	1179.24	81.97	5.15	1200.79	1149.80	772.897	118.077	
9	1236.70	76.73	10.84	1274.04	1200.79	1340.865	431.880	
10	1296.30	85.75	2.58	1335.09	1274.04	779.657	69.020	
11	1365.97	87.48	1.21	1396.13	1335.09	725.385	35.313	
12	1457.18	84.15	4.40	1482.31	1396.13	1150.161	172.300	
13	1506.73	78.93	11.04	1535.46	1482.31	799.867	274.123	
14	1546.95	91.31	0.60	1568.49	1535.46	275.025	9.168	

Lampiran 11 TSR5-6

Peak Pick

Date: 25/04/2024 08:49:21
System Administrator

File name: D:\240425 - Z Djafar11.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

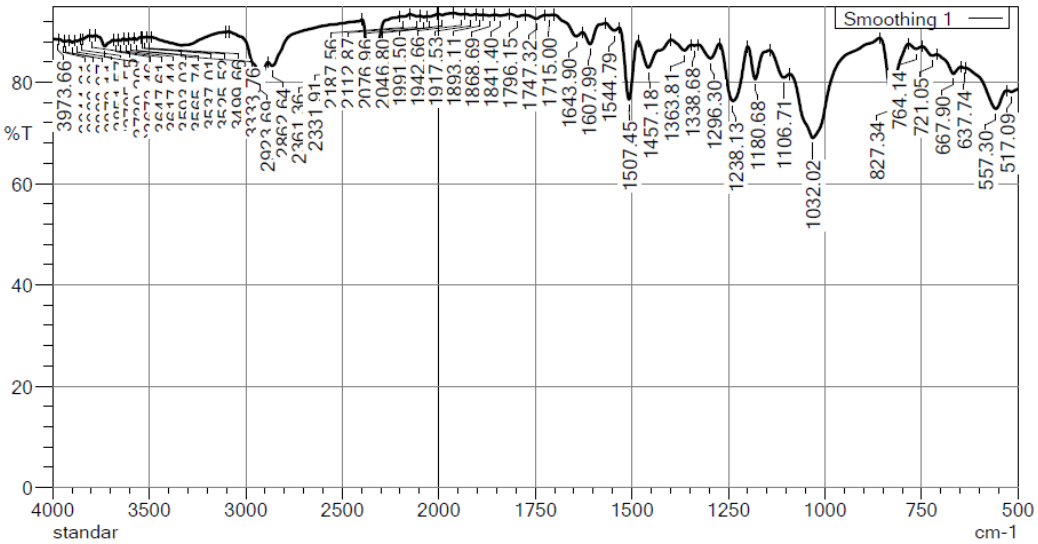
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	519.24	78.03	0.24	527.14	499.85	593.311	3.648	
2	558.02	73.80	5.53	637.02	527.14	2369.427	202.878	
3	639.18	82.45	0.07	649.95	637.02	225.164	0.358	
4	667.90	81.38	2.09	708.12	649.95	977.023	41.480	
5	723.20	84.52	1.10	747.62	708.12	583.565	22.038	
6	764.14	85.82	0.85	783.53	747.62	493.860	15.980	
7	827.34	74.08	13.74	858.22	783.53	1329.004	408.682	
8	879.76	87.38	0.36	889.10	858.22	379.647	7.297	
9	1032.73	67.20	15.47	1092.34	889.10	4277.231	1037.657	
10	1106.71	80.03	2.02	1144.05	1092.34	922.972	51.229	
11	1180.68	78.10	7.77	1199.35	1144.05	947.333	161.958	
12	1238.85	73.22	13.09	1273.32	1199.35	1558.356	544.420	
13	1295.59	83.24	3.43	1327.19	1273.32	809.508	92.294	
14	1337.96	86.53	0.18	1345.14	1327.19	240.041	1.609	

Lampiran 12 TSR5-8

Peak Pick

Date : 25/04/2024 08:52:48
System Administrator

File name : D:\240425 - Z Djafar12.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

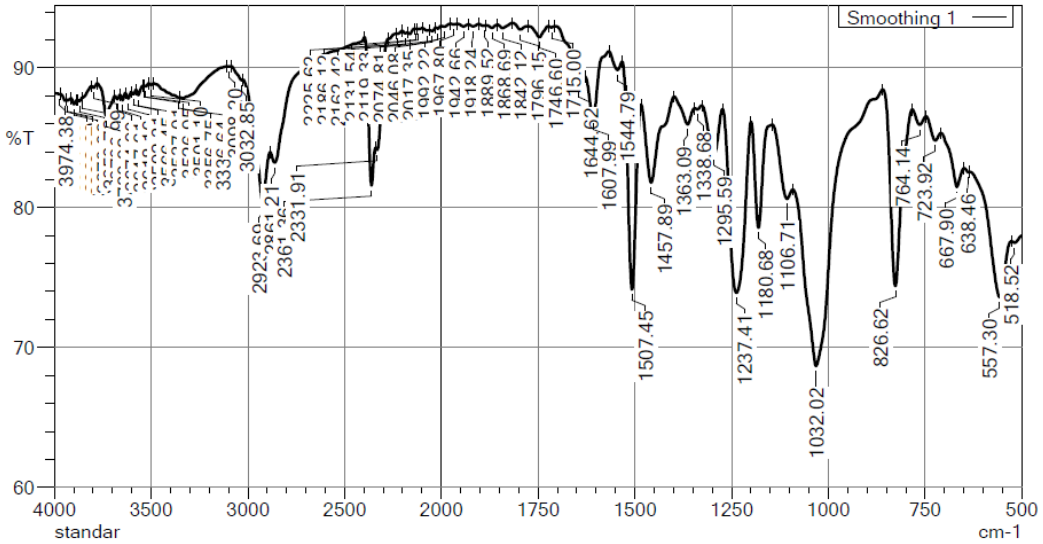
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	517.09	78.12	0.36	528.58	499.85	622.734	5.411	
2	557.30	74.77	4.78	635.58	528.58	2259.443	181.845	
3	637.74	82.79	0.05	647.79	635.58	209.016	0.260	
4	667.90	81.65	2.13	710.27	647.79	1030.271	44.975	
5	721.05	85.25	0.66	748.34	710.27	536.282	13.220	
6	764.14	86.60	0.67	783.53	748.34	459.477	12.380	
7	827.34	76.67	11.54	858.94	783.53	1246.804	350.879	
8	1032.02	69.00	14.42	1091.62	858.94	4517.553	1062.780	
9	1106.71	80.94	2.04	1143.33	1091.62	881.316	51.428	
10	1180.68	80.63	6.13	1200.07	1143.33	888.753	131.575	
11	1238.13	76.32	10.97	1273.32	1200.07	1385.004	453.525	
12	1296.30	84.72	2.76	1327.90	1273.32	760.530	76.664	
13	1338.68	87.22	0.14	1345.86	1327.90	228.258	1.309	
14	1363.81	86.28	1.40	1398.29	1345.86	670.884	33.389	

Lampiran 13 sTSR5-10

Peak Pick

Date: 25/04/2024 08:56:32
System Administrator

File name: D:\240425 - Z Djafar13.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

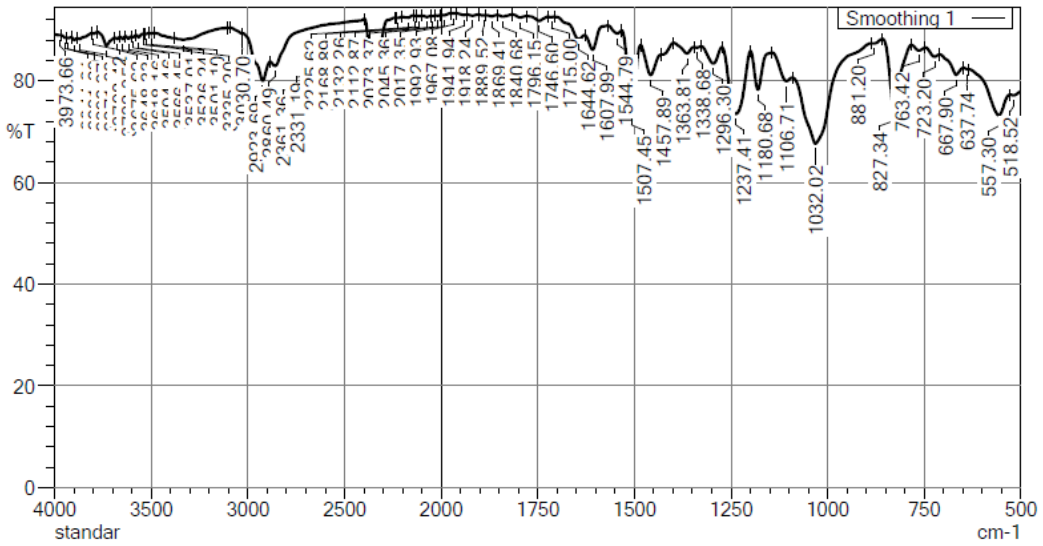
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	518.52	77.49	0.24	527.14	499.85	609.207	3.501	
2	557.30	73.60	5.38	634.87	527.14	2338.487	192.232	
3	638.46	82.53	0.10	649.23	634.87	249.199	0.542	
4	667.90	81.49	2.11	708.84	649.23	994.041	44.451	
5	723.92	84.81	0.99	747.62	708.84	564.759	19.026	
6	764.14	85.93	0.83	782.81	747.62	480.826	15.422	
7	826.62	74.39	13.45	859.65	782.81	1357.781	415.271	
8	1032.02	68.67	14.46	1091.62	859.65	4471.068	961.384	
9	1106.71	80.63	1.96	1145.49	1091.62	931.414	48.620	
10	1180.68	78.58	7.48	1200.07	1145.49	915.364	153.080	
11	1237.41	73.92	12.68	1273.32	1200.07	1510.987	528.675	
12	1295.59	83.81	3.34	1327.19	1273.32	780.684	89.771	
13	1338.68	87.03	0.15	1345.14	1327.19	231.118	1.390	
14	1363.09	85.96	1.43	1398.29	1345.14	697.672	34.444	

Lampiran 14 TSR5-12

Peak Pick

Date: 25/04/2024 09:01:30
System Administrator

File name: D:\240425 - Z Djafar14.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

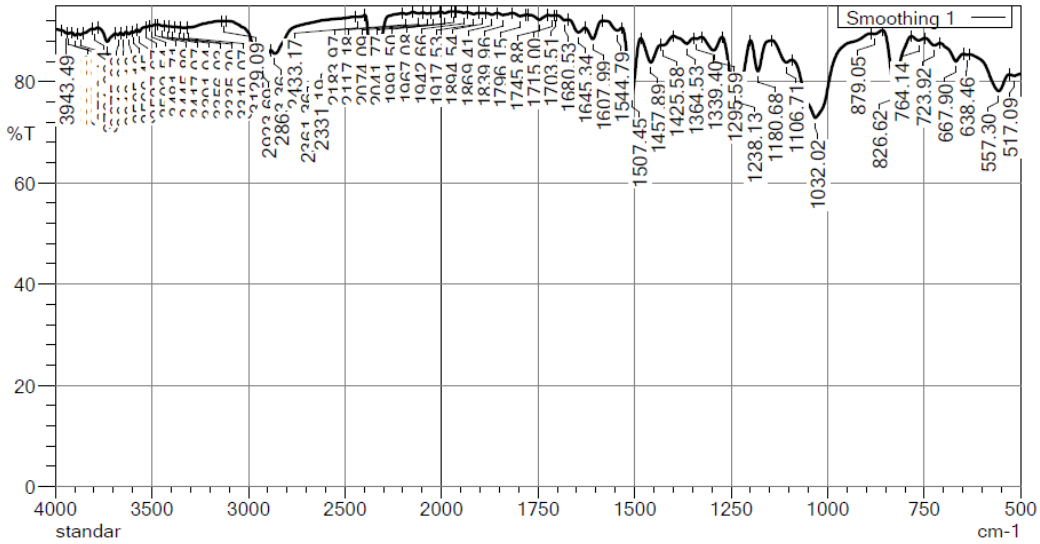
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	518.52	77.12	0.36	527.86	499.85	633.341	5.814	
2	557.30	73.21	5.41	635.58	527.86	2383.797	202.745	
3	637.74	82.23	0.07	648.51	635.58	228.101	0.413	
4	667.90	81.14	2.20	710.27	648.51	1044.948	46.380	
5	723.20	84.74	0.88	747.62	710.27	545.866	16.681	
6	763.42	85.93	0.82	783.53	747.62	490.187	15.393	
7	827.34	74.28	13.44	858.94	783.53	1342.020	409.085	
8	881.20	87.34	0.17	886.23	858.94	337.532	4.084	
9	1032.02	67.64	14.92	1091.62	886.23	4303.255	1011.747	
10	1106.71	79.93	2.09	1144.05	1091.62	940.020	52.465	
11	1180.68	78.28	7.44	1200.07	1144.05	957.387	155.110	
12	1237.41	73.47	12.73	1274.04	1200.07	1549.825	528.826	
13	1296.30	83.39	3.26	1327.19	1274.04	797.450	88.750	
14	1338.68	86.49	0.17	1345.86	1327.19	250.329	1.604	

Lampiran 15 TSR5-14

Peak Pick

Date: 25/04/2024 09:05:06
System Administrator

File name: D:\240425 - Z Djafar15.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

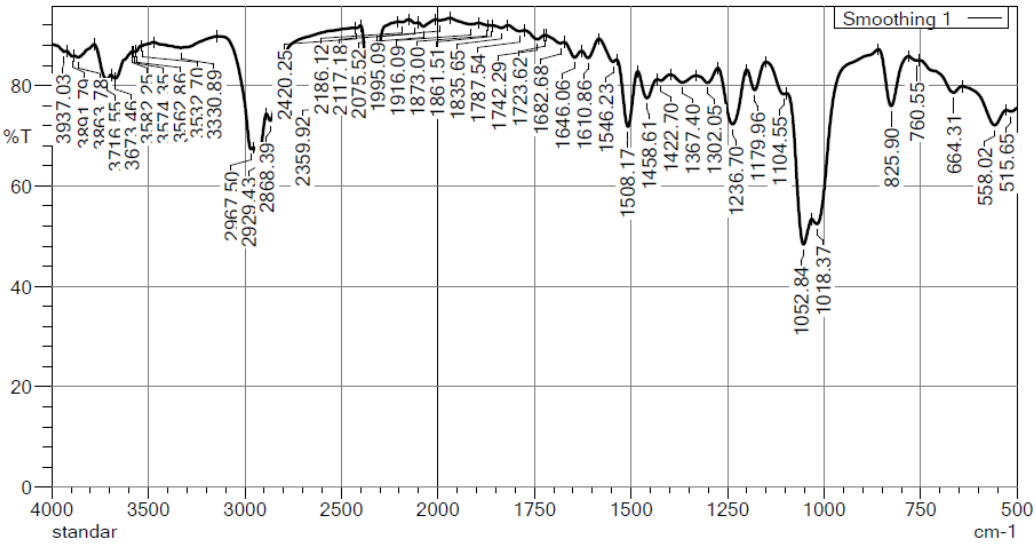
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	517.09	81.15	0.32	529.29	499.85	550.014	4.795	
2	557.30	78.16	4.32	632.71	529.29	1870.364	152.119	
3	638.46	85.28	0.12	648.51	632.71	231.302	0.871	
4	667.90	84.01	2.14	709.56	648.51	869.018	46.878	
5	723.92	87.18	0.79	747.62	709.56	468.210	15.246	
6	764.14	88.15	0.62	783.53	747.62	414.346	11.496	
7	826.62	78.78	10.87	858.22	783.53	1111.091	330.664	
8	879.05	89.43	0.26	888.38	858.22	311.866	4.743	
9	1032.02	72.87	12.96	1092.34	888.38	3571.010	897.805	
10	1106.71	83.84	1.51	1144.77	1092.34	759.867	37.327	
11	1180.68	82.07	6.06	1200.07	1144.77	781.359	125.380	
12	1238.13	78.12	10.36	1273.32	1200.07	1275.176	430.588	
13	1295.59	86.18	2.62	1326.47	1273.32	666.451	71.421	
14	1339.40	88.44	0.21	1346.58	1326.47	229.581	2.133	

Lampiran 16 TSR75-0

Peak Pick

Date: 25/04/2024 10:06:45
System Administrator

File name: D:\240425 - Z Djafar31.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

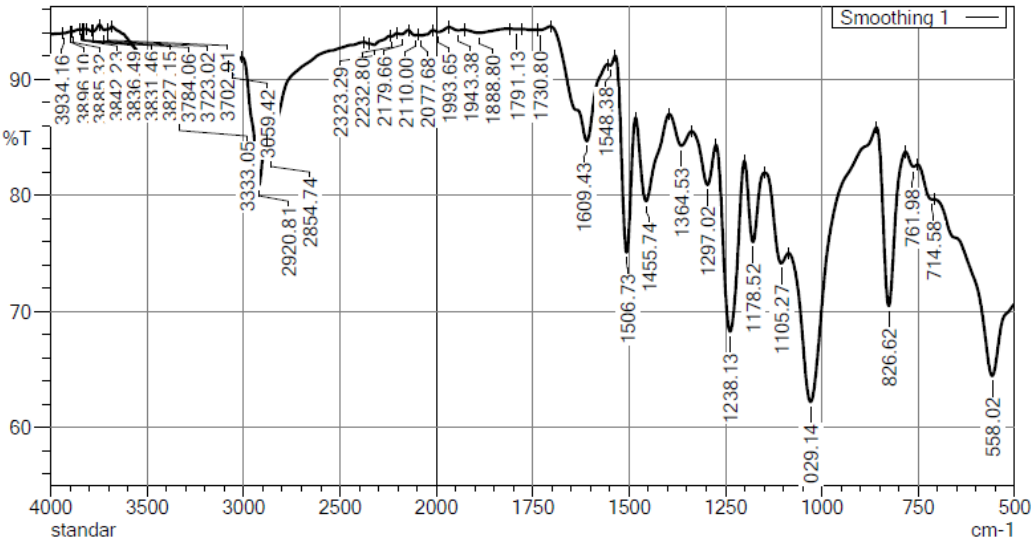
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	515.65	74.84	0.46	527.86	499.85	698.803	7.583	
2	558.02	72.11	4.24	642.05	527.86	2717.910	145.877	
3	664.31	78.60	2.30	753.36	642.05	2041.538	88.071	
4	760.55	85.00	0.24	782.09	753.36	422.854	4.375	
5	825.90	75.93	10.68	859.65	782.09	1402.778	357.140	
6	1018.37	52.42	3.67	1032.02	859.65	4022.597	-1094.678	
7	1052.84	48.34	13.13	1096.65	1032.02	2557.281	354.170	
8	1104.55	78.28	1.06	1150.52	1096.65	1010.036	16.188	
9	1179.96	79.12	4.65	1200.07	1150.52	906.061	108.543	
10	1236.70	72.30	10.99	1275.48	1200.07	1700.499	441.268	
11	1302.05	80.55	2.18	1330.78	1275.48	1016.831	60.098	
12	1367.40	80.58	1.47	1396.13	1330.78	1220.223	46.421	
13	1422.70	80.98	0.49	1432.04	1396.13	663.806	6.260	
14	1458.61	77.50	4.57	1482.31	1432.04	1021.459	117.580	

Lampiran 17 TSR75-2

Peak Pick

Date: 25/04/2024 07:54:46
System Administrator

File name: D:\240425 - Z Djafar1.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

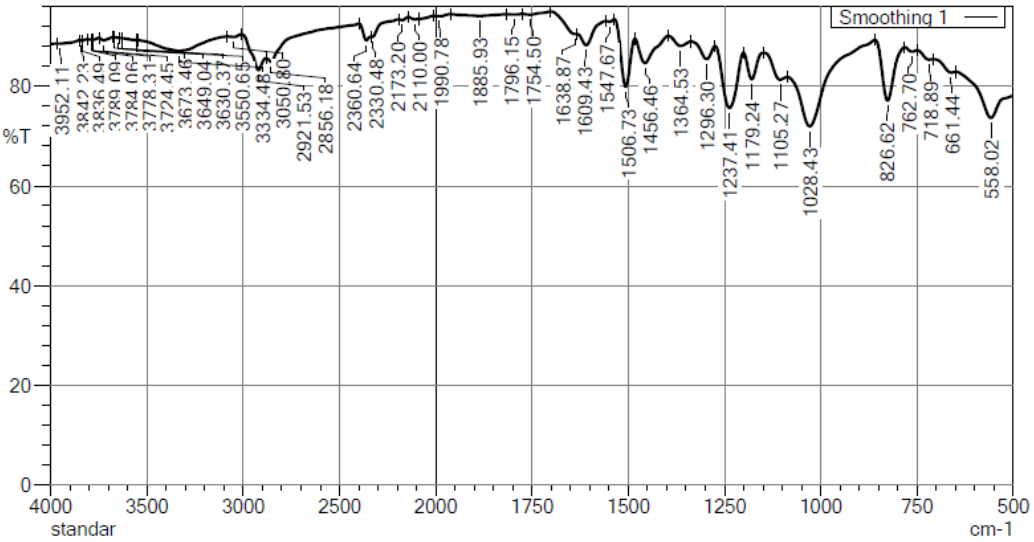
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.02	64.44	8.70	709.56	499.85	5743.157	530.474	
2	714.58	79.64	0.36	751.93	709.56	810.493	11.019	
3	761.98	82.46	0.52	782.81	751.93	528.987	9.443	
4	826.62	70.48	14.47	858.94	782.81	1623.714	465.326	
5	1029.14	62.19	15.52	1085.88	858.94	5405.858	962.750	
6	1105.27	74.14	3.04	1147.64	1085.88	1411.989	82.037	
7	1178.52	75.96	6.54	1200.79	1147.64	1092.090	157.811	
8	1238.13	68.26	15.36	1274.76	1200.79	1809.952	597.808	
9	1297.02	80.90	3.82	1337.96	1274.76	1061.127	107.055	
10	1364.53	84.27	1.91	1395.41	1337.96	846.593	55.841	
11	1455.74	79.51	7.26	1483.03	1395.41	1467.821	313.041	
12	1506.73	75.07	13.98	1536.17	1483.03	912.691	345.949	
13	1548.38	91.19	0.36	1555.57	1536.17	166.193	4.072	
14	1609.43	84.66	7.79	1704.23	1555.57	1568.889	513.971	

Lampiran 18 TSR75-4

Peak Pick

Date: 25/04/2024 08:12:58
System Administrator

File name: D:\240425 - Z Djafar3.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

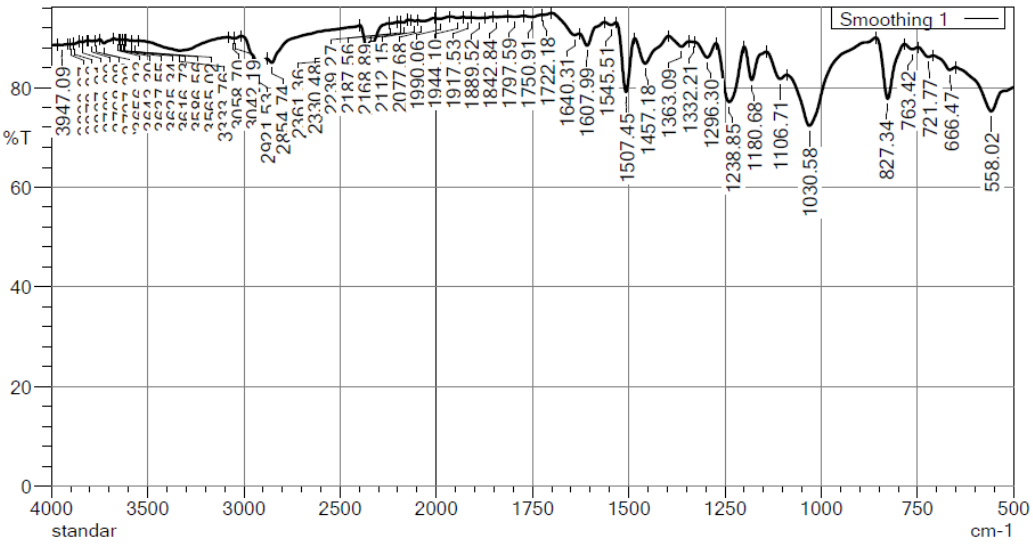
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.02	73.67	6.36	648.51	499.85	3212.317	319.999	
2	661.44	82.76	0.70	708.12	648.51	954.546	11.579	
3	718.89	85.37	0.54	749.77	708.12	580.897	11.843	
4	762.70	86.97	0.50	782.09	749.77	411.721	9.008	
5	826.62	77.14	11.56	859.65	782.09	1264.144	379.189	
6	1028.43	71.98	11.83	1087.32	859.65	4042.731	764.551	
7	1105.27	81.34	1.95	1149.08	1087.32	1018.184	48.969	
8	1179.24	81.44	5.31	1200.79	1149.08	810.586	125.405	
9	1237.41	75.67	11.75	1274.76	1200.79	1391.070	461.157	
10	1296.30	85.47	2.93	1337.24	1274.76	796.116	80.479	
11	1364.53	88.10	1.41	1396.13	1337.24	656.197	41.239	
12	1456.46	84.70	5.04	1483.03	1396.13	1090.594	208.003	
13	1506.73	79.92	11.39	1536.17	1483.03	735.735	285.262	
14	1547.67	92.95	0.34	1558.44	1536.17	153.185	4.000	

Lampiran 19 TSR75-6

Peak Pick

Date: 25/04/2024 08:17:52
System Administrator

File name: D:\240425 - Z Djafar4.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

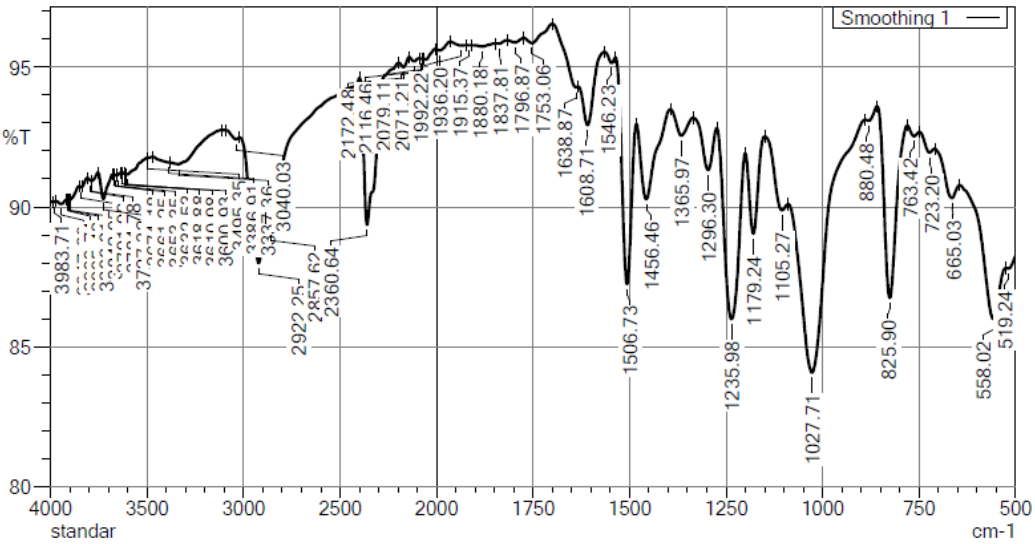
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.02	75.24	6.37	650.67	499.85	3025.553	320.360	
2	666.47	83.54	1.15	708.84	650.67	878.970	19.405	
3	721.77	86.15	0.79	748.34	708.84	520.290	16.024	
4	763.42	87.69	0.66	783.53	748.34	420.953	12.557	
5	827.34	77.77	11.71	858.22	783.53	1144.959	350.295	
6	1030.58	72.35	12.11	1090.19	858.22	3955.216	770.742	
7	1106.71	81.73	2.27	1142.62	1090.19	852.581	58.699	
8	1180.68	81.54	6.29	1200.07	1142.62	848.131	140.069	
9	1238.85	77.13	11.41	1273.32	1200.07	1306.397	465.011	
10	1296.30	86.04	2.94	1330.06	1273.32	703.123	79.440	
11	1332.21	89.16	0.01	1342.99	1330.06	139.797	0.163	
12	1363.09	88.22	1.42	1396.85	1342.99	587.384	37.021	
13	1457.18	84.81	5.18	1484.47	1396.85	1087.149	218.347	
14	1507.45	79.16	12.19	1533.30	1484.47	681.366	263.797	

Lampiran 20 TSSR75-8

Peak Pick

Date: 25/04/2024 08:22:17
System Administrator

File name: D:\240425 - Z Djafar5.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

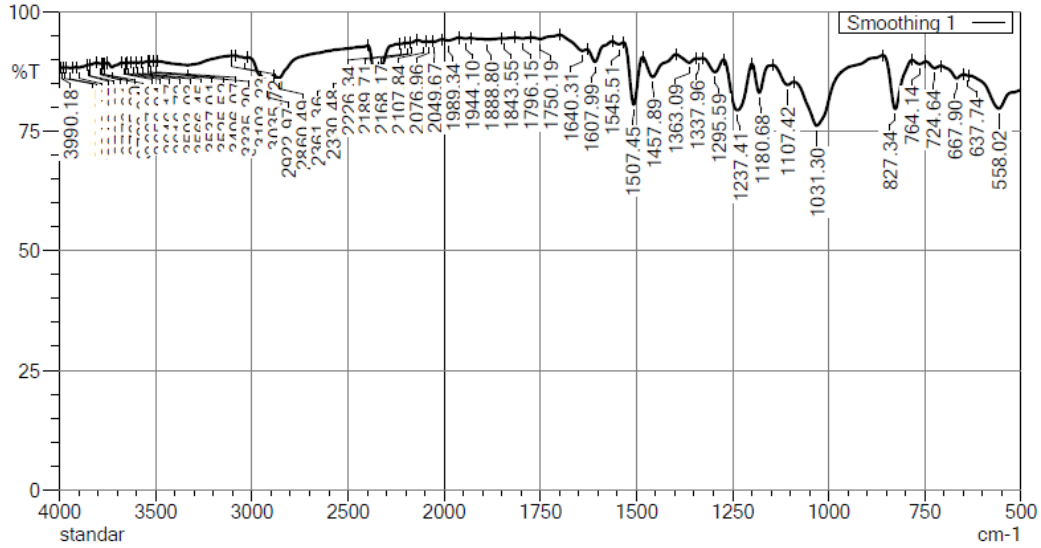
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	519.24	87.80	0.12	525.70	499.85	312.040	2.613	
2	558.02	86.00	2.62	644.92	525.70	1367.731	91.386	
3	665.03	90.32	0.86	709.56	644.92	578.242	24.417	
4	723.20	91.95	0.34	749.06	709.56	307.496	6.652	
5	763.42	92.53	0.26	780.66	749.06	232.021	4.310	
6	825.90	86.75	6.56	858.94	780.66	748.959	220.918	
7	880.48	93.09	0.18	889.82	858.94	208.551	3.499	
8	1027.71	84.07	6.96	1089.47	889.82	2136.429	460.850	
9	1105.27	89.88	0.85	1149.80	1089.47	544.870	20.500	
10	1179.24	89.05	3.12	1200.79	1149.80	469.171	72.241	
11	1235.98	85.99	6.36	1274.04	1200.79	813.871	254.539	
12	1296.30	91.32	1.63	1335.80	1274.04	475.843	43.603	
13	1365.97	92.55	0.79	1394.69	1335.80	415.069	22.797	
14	1456.46	90.28	2.84	1482.31	1394.69	708.736	115.222	

Lampiran 21 TSR75-10

Peak Pick

Date: 25/04/2024 08:27:10
System Administrator

File name: D:\240425 - Z Djafar6.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

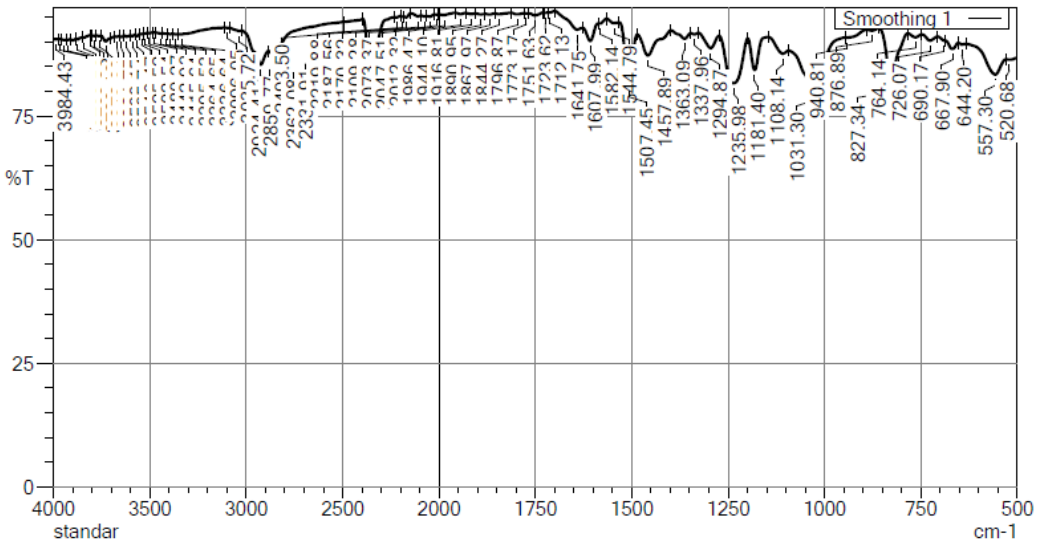
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	558.02	79.70	5.17	635.58	499.85	2269.390	245.144	
2	637.74	86.57	0.05	649.95	635.58	191.178	0.207	
3	667.90	85.98	1.40	708.84	649.95	749.493	26.548	
4	724.64	88.16	0.82	747.62	708.84	439.876	15.674	
5	764.14	88.99	0.66	782.81	747.62	376.129	12.345	
6	827.34	79.61	10.79	859.65	782.81	1075.898	332.460	
7	1031.30	76.13	10.57	1090.91	859.65	3441.765	679.478	
8	1107.42	84.65	1.67	1145.49	1090.91	750.545	41.192	
9	1180.68	83.03	5.89	1200.07	1145.49	728.301	120.890	
10	1237.41	79.35	10.12	1273.32	1200.07	1193.267	421.249	
11	1295.59	87.32	2.72	1327.90	1273.32	614.707	72.531	
12	1337.96	90.14	0.05	1343.70	1327.90	155.327	0.467	
13	1363.09	89.28	1.20	1396.85	1343.70	530.063	30.313	
14	1457.89	86.30	4.30	1483.75	1396.85	975.223	169.261	

Lampiran 22 TSR75-12

Peak Pick

Date: 25/04/2024 08:33:23
System Administrator

File name: D:\240425 - Z Djafar7.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

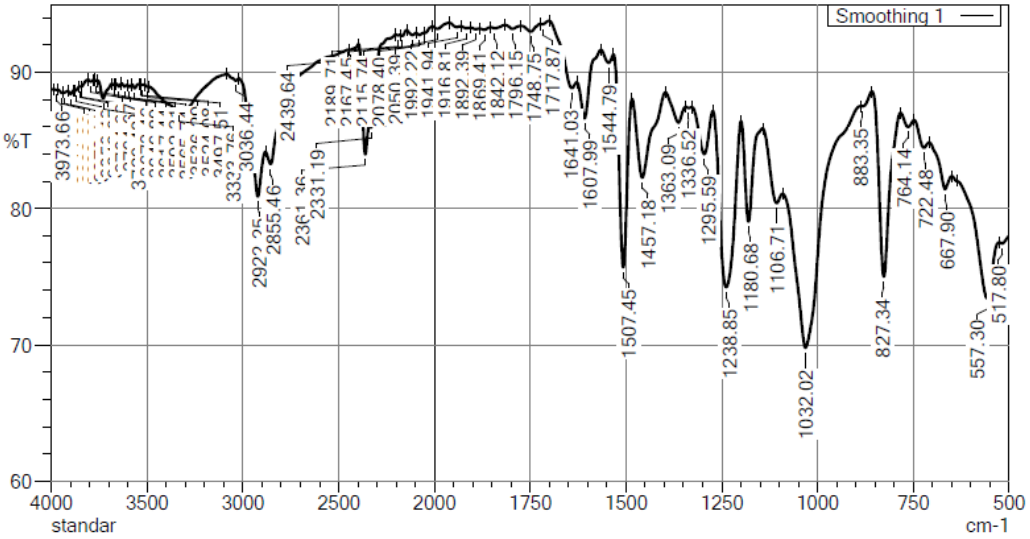
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	520.68	86.40	0.16	528.58	499.85	386.998	3.039	
2	557.30	83.41	3.93	632.71	528.58	1385.760	139.671	
3	644.20	89.47	0.24	652.82	632.71	209.360	2.178	
4	667.90	88.62	1.40	688.01	652.82	374.947	24.796	
5	690.17	90.29	0.09	707.40	688.01	180.910	0.424	
6	726.07	90.28	1.01	747.62	707.40	369.973	20.059	
7	764.14	90.93	0.67	784.25	747.62	319.615	12.527	
8	827.34	82.02	10.31	859.65	784.25	899.833	315.621	
9	876.89	92.28	0.33	891.25	859.65	238.599	5.514	
10	940.81	90.89	0.09	943.68	891.25	445.965	9.548	
11	1031.30	80.30	9.02	1092.34	943.68	2072.081	518.835	
12	1108.14	87.61	1.42	1146.21	1092.34	596.483	36.223	
13	1181.40	84.33	6.46	1199.35	1146.21	611.585	124.735	
14	1235.98	81.65	9.31	1274.04	1199.35	1078.501	403.758	

Lampiran 23 TSR75-14

Peak Pick

Date: 25/04/2024 08:37:05
System Administrator

File name: D:\240425 - Z Djafar8.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

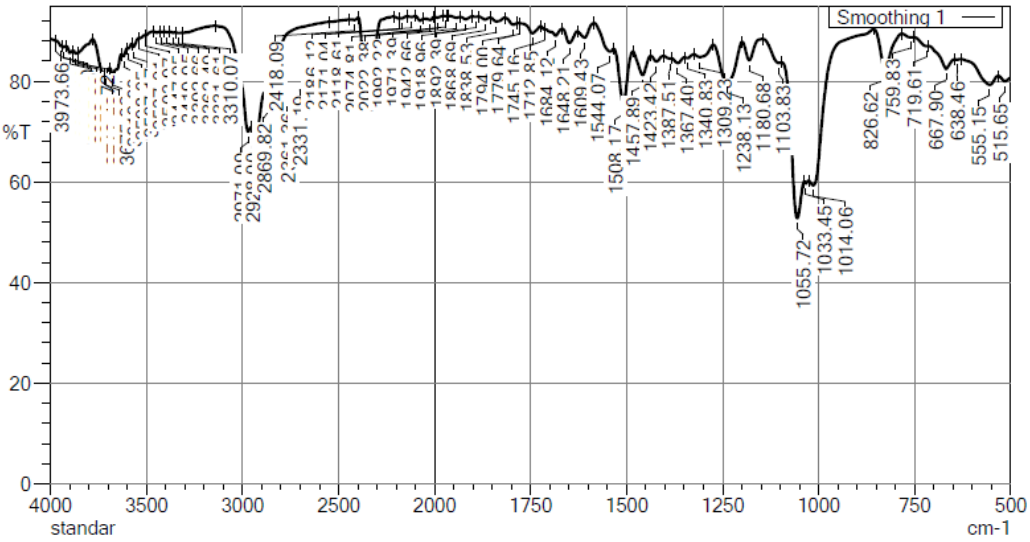
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	517.80	77.44	0.22	525.70	499.85	578.378	3.325	
2	557.30	73.42	5.38	636.30	525.70	2443.247	205.342	
3	667.90	81.43	1.69	708.84	649.95	998.948	33.284	
4	722.48	84.46	0.95	748.34	708.84	585.210	18.690	
5	764.14	85.98	0.74	783.53	748.34	479.990	13.695	
6	827.34	75.01	12.93	858.22	783.53	1299.115	387.927	
7	883.35	87.50	0.11	886.23	858.22	339.154	4.245	
8	1032.02	69.79	13.16	1091.62	886.23	4073.301	847.221	
9	1106.71	80.40	2.08	1143.33	1091.62	909.126	54.591	
10	1180.68	79.04	7.17	1200.07	1143.33	940.755	153.897	
11	1238.85	74.23	12.56	1273.32	1200.07	1484.923	515.904	
12	1295.59	84.00	3.27	1328.62	1273.32	790.758	88.030	
13	1336.52	87.37	0.07	1344.42	1328.62	199.033	0.626	
14	1363.09	86.30	1.53	1396.85	1344.42	668.909	38.700	

Lampiran 24 TSR10-0

Peak Pick

Date: 25/04/2024 10:10:33
System Administrator

File name: D:\240425 - Z Djafar32.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

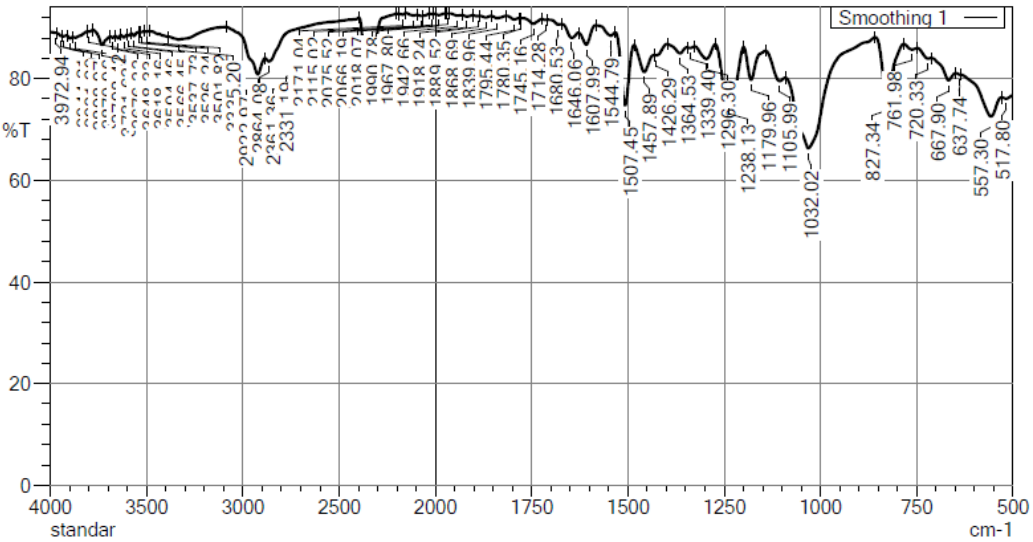
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	515.65	80.03	0.90	532.89	499.85	645.077	15.414	
2	555.15	79.34	2.52	630.56	532.89	1770.533	87.292	
3	638.46	84.29	0.11	645.64	630.56	235.877	0.722	
4	667.90	82.48	2.74	714.58	645.64	1054.051	67.965	
5	719.61	87.00	0.25	754.08	714.58	480.910	2.866	
6	759.83	88.75	0.16	783.53	754.08	323.679	3.606	
7	826.62	82.43	7.57	856.78	783.53	969.483	231.247	
8	1014.06	59.33	3.08	1026.27	856.78	3065.918	-1121.703	
9	1033.45	59.69	0.43	1037.04	1026.27	431.321	2.040	
10	1055.72	52.78	14.71	1096.65	1037.04	1984.113	309.668	
11	1103.83	83.65	0.79	1145.49	1096.65	696.077	16.191	
12	1180.68	84.21	3.82	1199.35	1145.49	717.206	77.236	
13	1238.13	79.87	7.66	1274.76	1199.35	1263.813	324.603	
14	1309.23	84.82	1.14	1325.03	1274.76	729.014	40.892	

Lampiran 25 TSR10-2

Peak Pick

Date: 25/04/2024 09:09:02
System Administrator

File name: D:\240425 - Z Djafar16.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

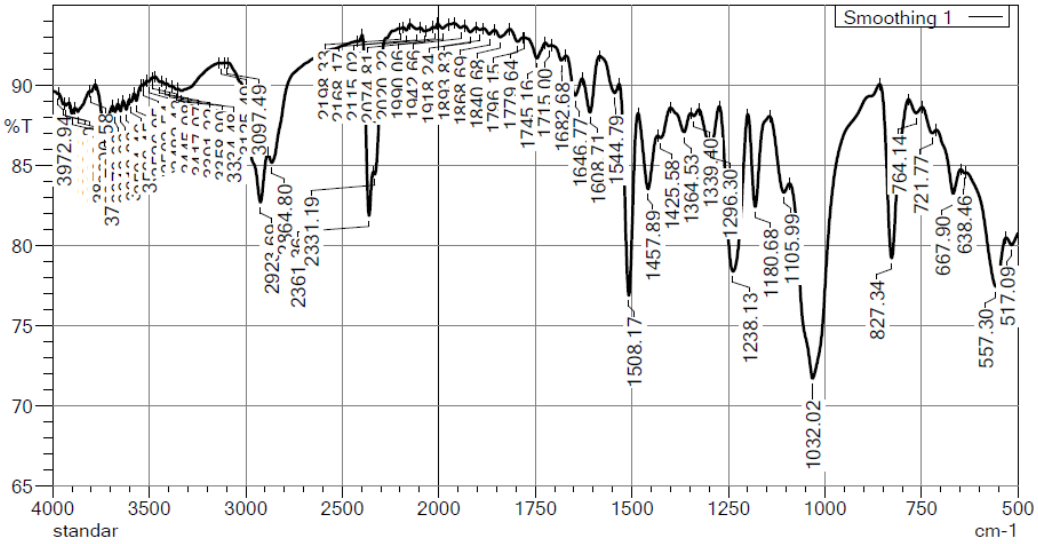
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	517.80	76.02	0.46	529.29	499.85	698.315	7.266	
2	557.30	72.55	4.91	636.30	529.29	2476.455	178.609	
3	637.74	80.76	0.04	648.51	636.30	233.141	0.143	
4	667.90	79.63	2.35	711.71	648.51	1150.838	47.742	
5	720.33	83.93	0.56	748.34	711.71	560.150	10.957	
6	761.98	85.71	0.59	783.53	748.34	490.314	11.522	
7	827.34	75.88	11.70	858.22	783.53	1285.598	349.278	
8	1032.02	66.30	15.88	1091.62	858.22	4851.516	1148.080	
9	1105.99	79.52	2.12	1142.62	1091.62	930.586	53.387	
10	1179.96	79.79	6.13	1199.35	1142.62	942.607	137.479	
11	1238.13	75.20	11.26	1273.32	1199.35	1463.999	461.414	
12	1296.30	83.87	2.69	1327.19	1273.32	801.432	75.556	
13	1339.40	85.98	0.23	1346.58	1327.19	269.312	2.271	
14	1364.53	84.98	1.38	1397.57	1346.58	721.227	30.620	

Lampiran 26 TSR10-4

Peak Pick

Date: 25/04/2024 09:12:48
System Administrator

File name: D:\240425 - Z Djafar17.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

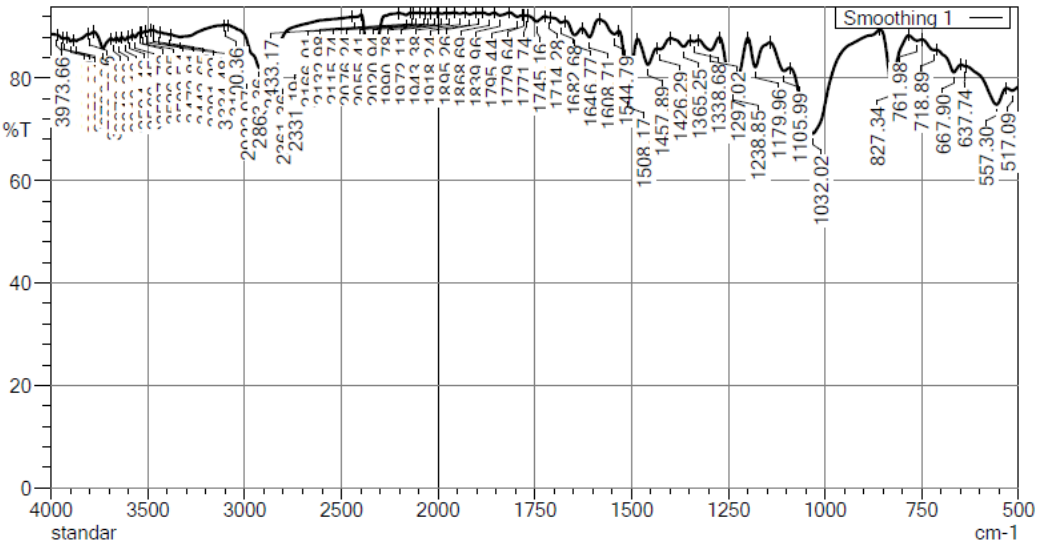
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	517.09	80.03	0.57	530.73	499.85	607.973	9.522	
2	557.30	77.43	4.08	634.87	530.73	1967.778	146.730	
3	638.46	84.50	0.09	648.51	634.87	210.141	0.510	
4	667.90	83.21	2.29	710.99	648.51	926.856	49.736	
5	721.77	87.01	0.60	748.34	710.99	463.374	11.729	
6	764.14	88.26	0.58	783.53	748.34	402.758	10.659	
7	827.34	79.21	10.44	858.22	783.53	1093.659	314.834	
8	1032.02	71.70	13.74	1091.62	858.22	4043.622	998.128	
9	1105.99	83.31	1.71	1143.33	1091.62	770.660	44.303	
10	1180.68	82.42	5.70	1200.07	1143.33	795.489	120.803	
11	1238.13	78.38	10.04	1274.04	1200.07	1273.191	416.051	
12	1296.30	86.16	2.42	1326.47	1274.04	667.166	67.570	
13	1339.40	88.07	0.26	1347.29	1326.47	245.203	2.560	
14	1364.53	87.07	1.27	1400.44	1347.29	643.881	27.612	

Lampiran 27 TSR10-6

Peak Pick

Date: 25/04/2024 09:16:28
System Administrator

File name: D:\240425 - Z Djafar18.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

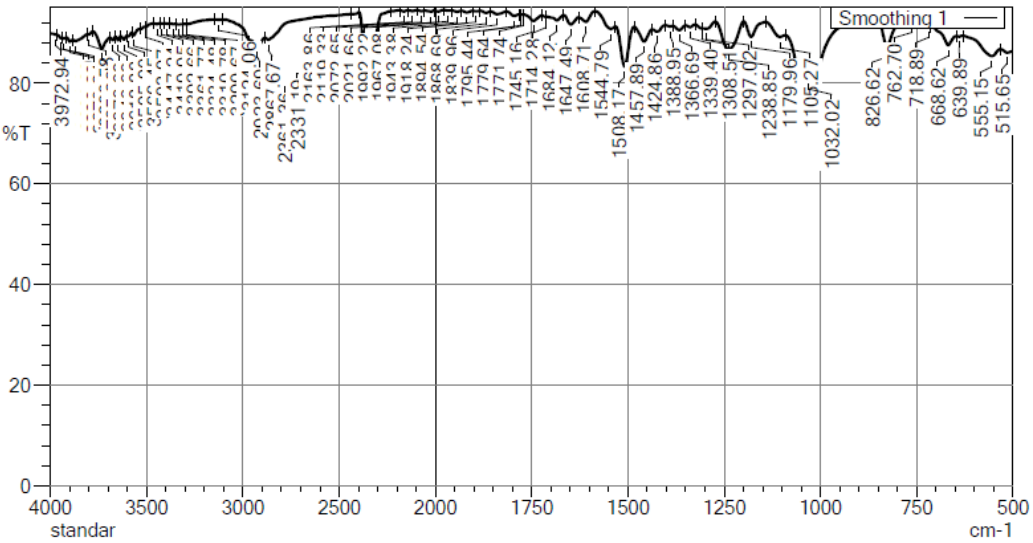
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	517.09	77.57	0.60	530.73	499.85	683.190	9.847	
2	557.30	74.84	4.29	635.58	530.73	2236.863	159.087	
3	637.74	82.31	0.06	648.51	635.58	226.994	0.315	
4	667.90	81.12	2.37	713.15	648.51	1077.234	47.812	
5	718.89	85.51	0.35	749.06	713.15	491.033	7.466	
6	761.98	87.34	0.48	784.25	749.06	434.237	9.261	
7	827.34	78.80	10.19	857.50	784.25	1114.135	299.800	
8	1032.02	69.18	14.74	1091.62	857.50	4440.750	1101.165	
9	1105.99	81.42	1.99	1142.62	1091.62	839.433	49.028	
10	1179.96	82.18	5.34	1200.07	1142.62	846.233	121.919	
11	1238.85	77.88	10.02	1273.32	1200.07	1294.264	407.450	
12	1297.02	85.48	2.28	1327.19	1273.32	727.183	65.948	
13	1338.68	87.11	0.28	1348.01	1327.19	265.178	2.882	
14	1365.25	86.18	1.31	1399.72	1348.01	670.306	27.580	

Lampiran 28 TSR10-8

Peak Pick

Date: 25/04/2024 09:20:23
System Administrator

File name: D:\240425 - Z Djafar19.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

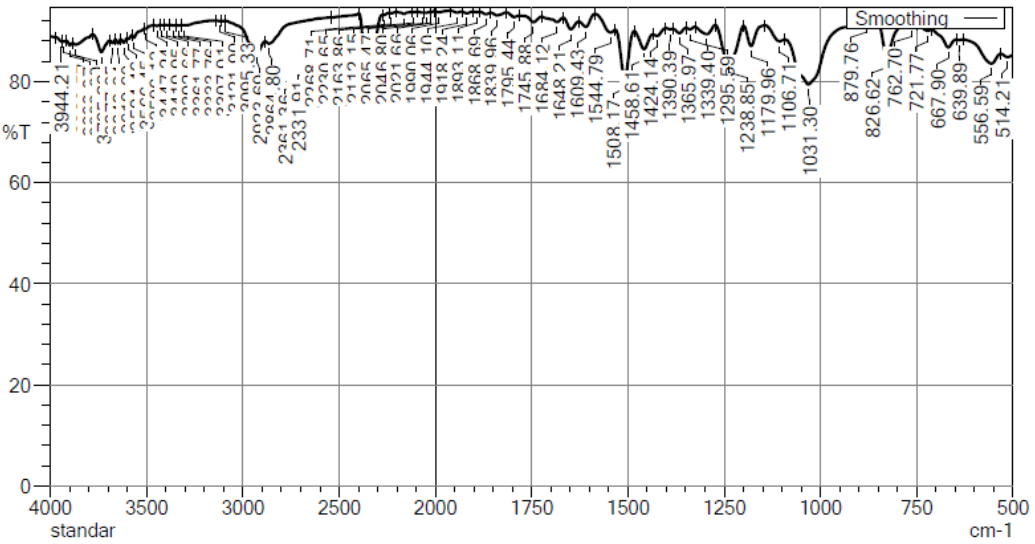
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	515.65	86.07	0.52	533.60	499.85	461.066	8.693	
2	555.15	85.39	1.95	630.56	533.60	1223.007	67.850	
3	639.89	89.26	0.13	647.08	630.56	176.190	0.870	
4	668.62	87.57	2.41	713.87	647.08	702.412	55.782	
5	718.89	91.26	0.17	749.77	713.87	297.226	2.964	
6	762.70	92.25	0.22	783.53	749.77	256.926	4.066	
7	826.62	87.39	5.71	856.78	783.53	681.450	171.019	
8	1032.02	81.02	9.47	1091.62	856.78	2771.965	762.103	
9	1105.27	89.20	1.01	1142.62	1091.62	492.977	25.682	
10	1179.96	89.23	3.00	1199.35	1142.62	508.632	67.167	
11	1238.85	86.82	5.44	1273.32	1199.35	796.354	223.448	
12	1297.02	90.82	0.46	1306.36	1273.32	288.280	9.769	
13	1308.51	90.90	0.08	1325.75	1306.36	170.385	1.010	
14	1339.40	91.12	0.43	1350.17	1325.75	211.019	4.902	

Lampiran 29 TSR10-10

Peak Pick

Date: 25/04/2024 09:24:00
System Administrator

File name: D:\240425 - Z Djafar20.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

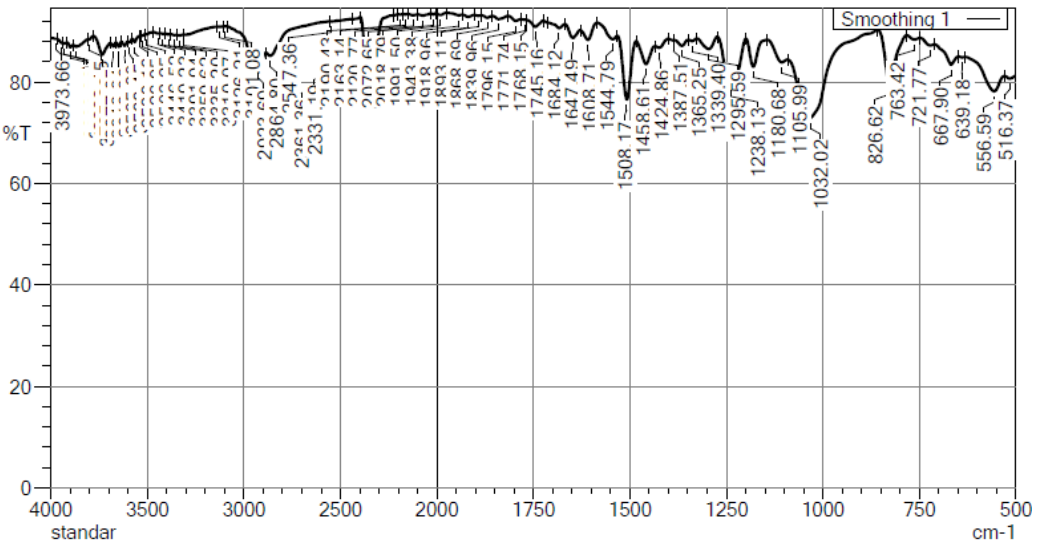
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	514.21	84.86	0.51	532.17	499.85	480.714	8.577	
2	556.59	83.58	2.66	629.12	532.17	1360.762	94.730	
3	639.89	88.21	0.12	647.79	629.12	219.026	1.118	
4	667.90	86.76	2.16	710.99	647.79	730.698	52.256	
5	721.77	90.07	0.44	749.06	710.99	360.673	8.091	
6	762.70	91.07	0.34	783.53	749.06	301.066	6.294	
7	826.62	84.95	7.27	857.50	783.53	798.983	217.576	
8	879.76	91.98	0.22	889.10	857.50	246.895	4.303	
9	1031.30	79.45	9.98	1092.34	889.10	2717.959	719.096	
10	1106.71	87.99	1.11	1144.05	1092.34	558.212	27.206	
11	1179.96	87.06	4.00	1199.35	1144.05	578.461	85.413	
12	1238.85	84.00	7.11	1273.32	1199.35	950.071	292.092	
13	1295.59	89.38	1.66	1325.75	1273.32	518.612	47.357	
14	1339.40	90.37	0.34	1349.45	1325.75	223.692	4.083	

Lampiran 30 TSR10-12

Peak Pick

Date: 25/04/2024 09:27:35
System Administrator

File name: D:\240425 - Z Djafar21.ispd



	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

Peak table

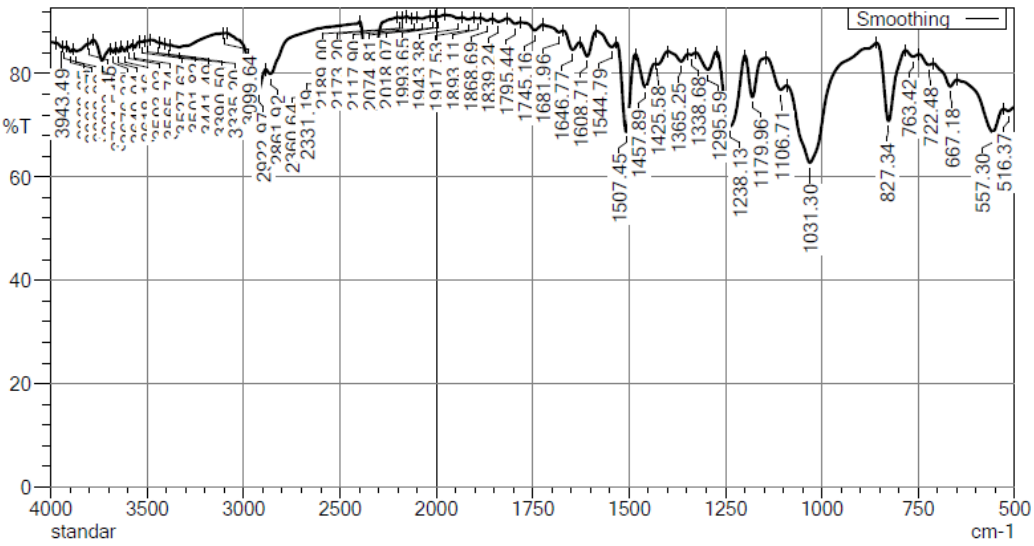
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	516.37	80.69	0.55	530.01	499.85	574.366	8.867	
2	556.59	78.20	3.97	631.99	530.01	1870.059	144.682	
3	639.18	84.86	0.15	648.51	631.99	248.677	1.052	
4	667.90	83.46	2.33	710.99	648.51	911.442	51.805	
5	721.77	87.25	0.56	748.34	710.99	456.111	10.739	
6	763.42	88.41	0.53	782.81	748.34	389.844	9.762	
7	826.62	79.76	10.07	858.22	782.81	1081.003	307.788	
8	1032.02	72.97	12.95	1091.62	858.22	3886.450	933.825	
9	1105.99	83.92	1.59	1144.05	1091.62	753.993	40.572	
10	1180.68	83.07	5.42	1199.35	1144.05	752.452	113.755	
11	1238.13	79.30	9.46	1273.32	1199.35	1224.466	392.323	
12	1295.59	86.53	2.26	1326.47	1273.32	660.898	64.136	
13	1339.40	88.08	0.37	1348.73	1326.47	260.664	3.964	
14	1365.25	87.18	1.13	1384.64	1348.73	439.367	19.555	

Lampiran 31 TSR10-14S

Peak Pick

Date: 25/04/2024 09:31:06
System Administrator

File name: D:\240425 - Z Djafar22.ispd

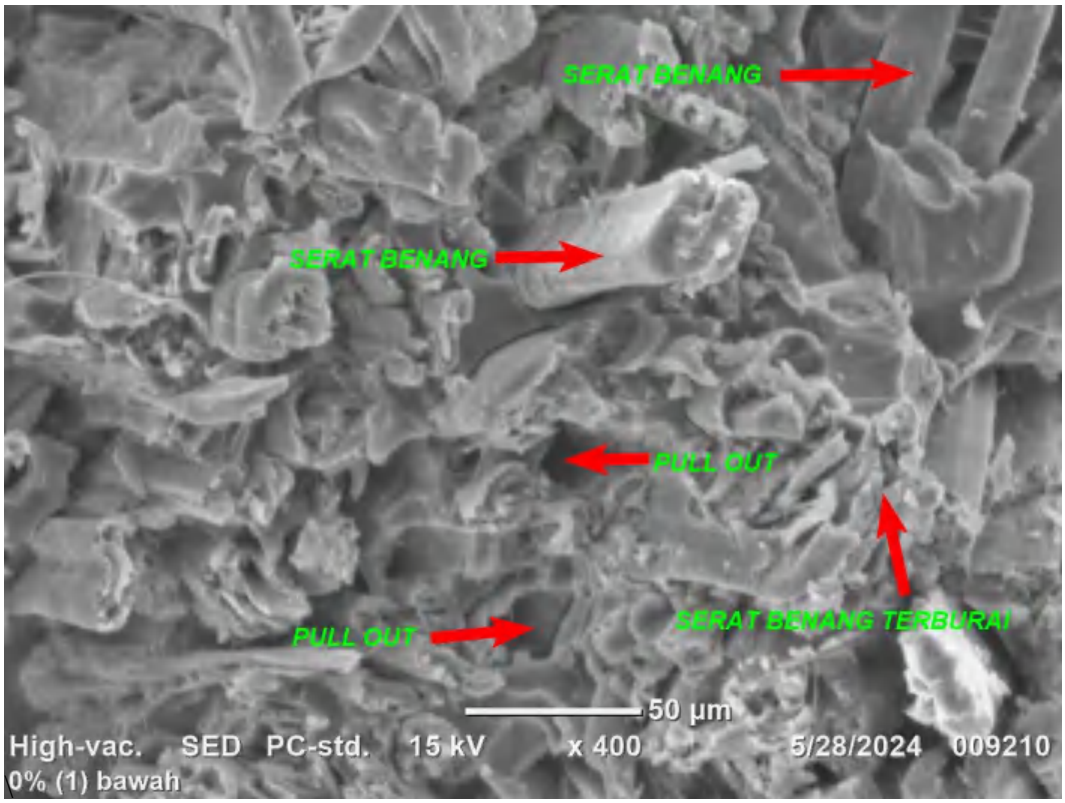


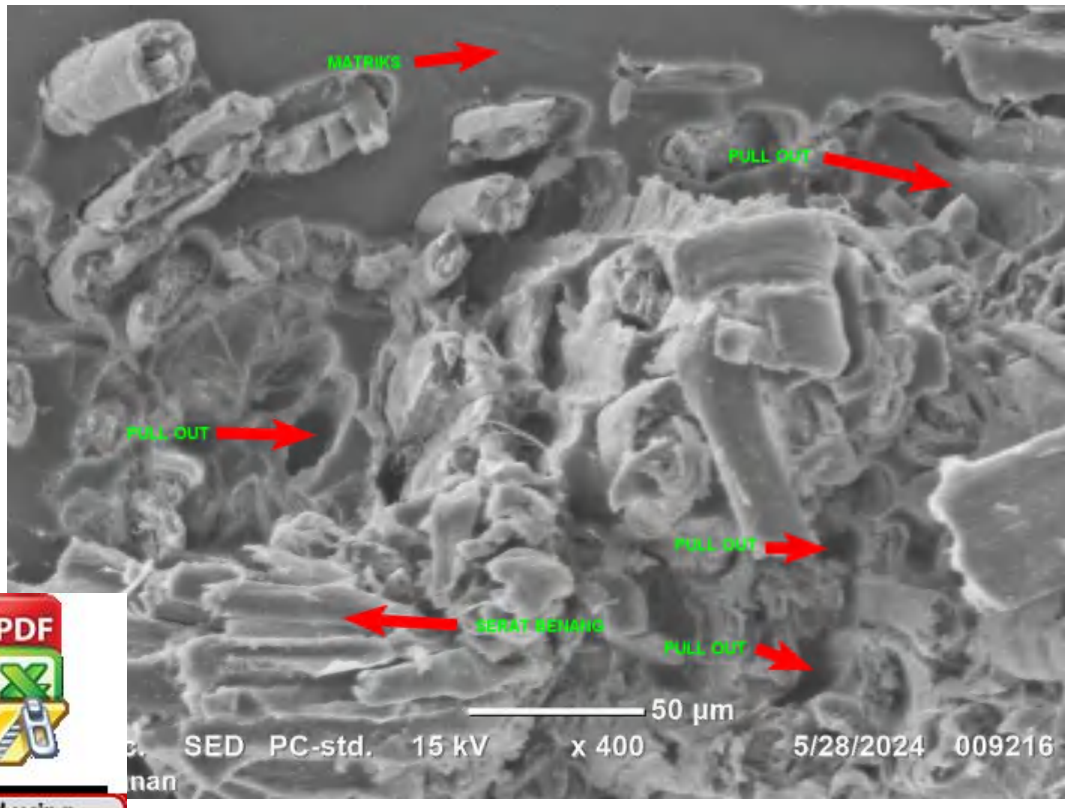
	Item	Value
1	Comment	standar
2	Sample name	Komposit serat rami
3	Sample ID	
6	Apodization	Happ-Genzel
7	Min	500
8	Max	4000
9	No. of Scans	32
10	Resolution	2 cm-1
11	FTIR Model	IRSpirit_DESKTOP-F56SDMU-Instrument1

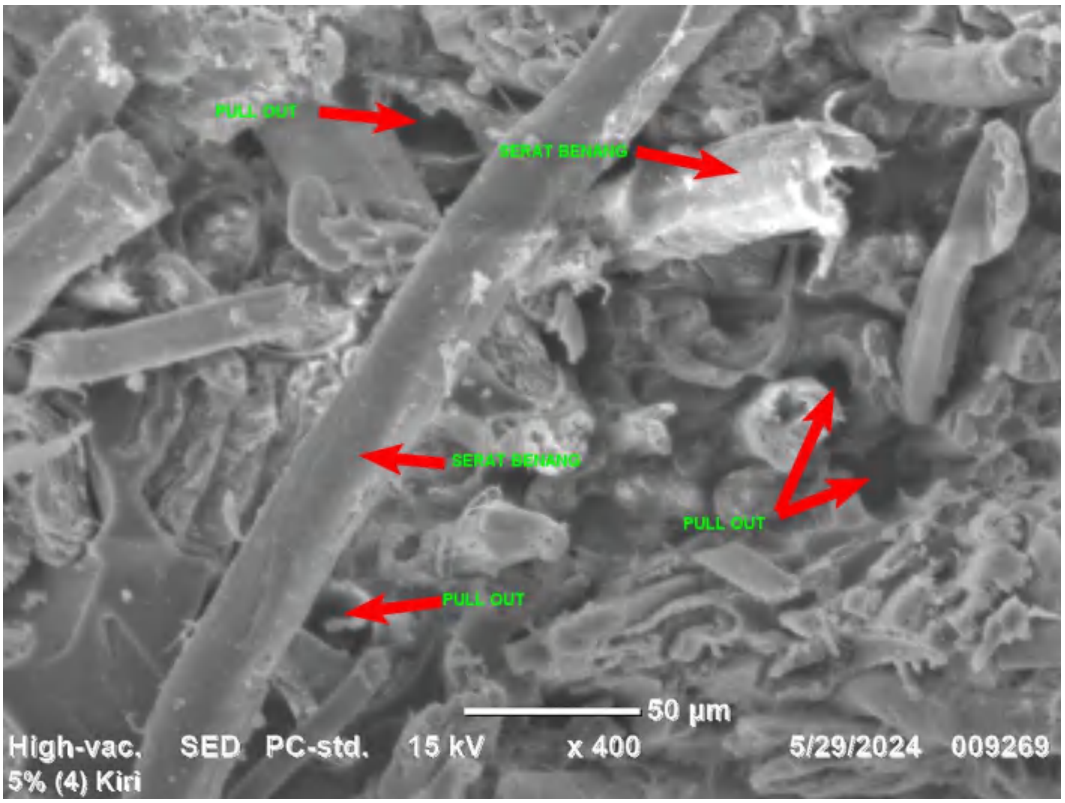
Peak table

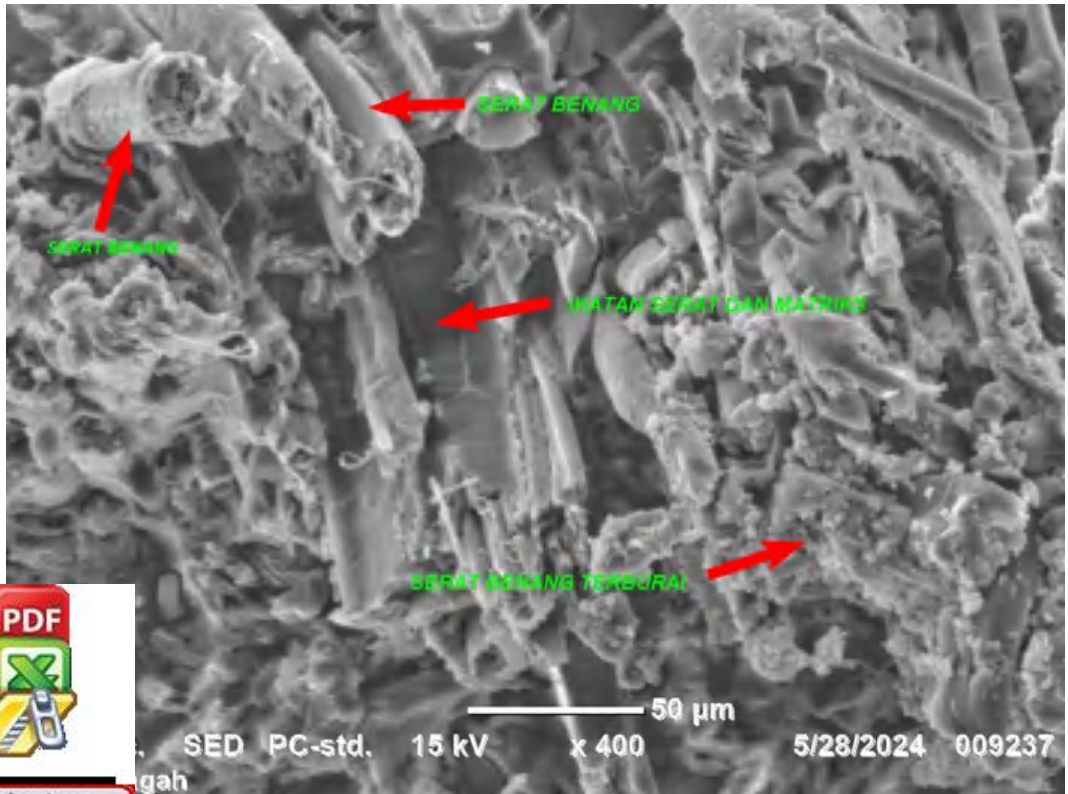
	Peak	Intensity	Corr. Intensity	Base (H)	Base (L)	Area	Corr. Area	Comment
1	516.37	72.80	0.54	528.58	499.85	773.476	8.317	
2	557.30	68.75	5.75	649.23	528.58	3094.679	196.655	
3	667.18	77.52	2.19	711.71	649.23	1274.158	48.210	
4	722.48	81.69	0.80	748.34	711.71	642.619	14.803	
5	763.42	83.28	0.81	782.81	748.34	561.900	14.940	
6	827.34	70.83	14.51	858.22	782.81	1553.585	438.104	
7	1031.30	62.77	17.03	1091.62	858.22	5445.437	1196.262	
8	1106.71	76.90	2.33	1144.05	1091.62	1086.612	58.022	
9	1179.96	75.50	7.85	1199.35	1144.05	1090.653	166.374	
10	1238.13	69.81	14.07	1273.32	1199.35	1772.471	578.568	
11	1295.59	80.78	3.39	1326.47	1273.32	935.424	93.057	
12	1338.68	83.65	0.25	1347.29	1326.47	337.364	2.599	
13	1365.25	82.37	1.61	1399.00	1347.29	859.976	35.582	
14	1425.58	81.82	0.60	1432.76	1399.00	579.990	10.022	

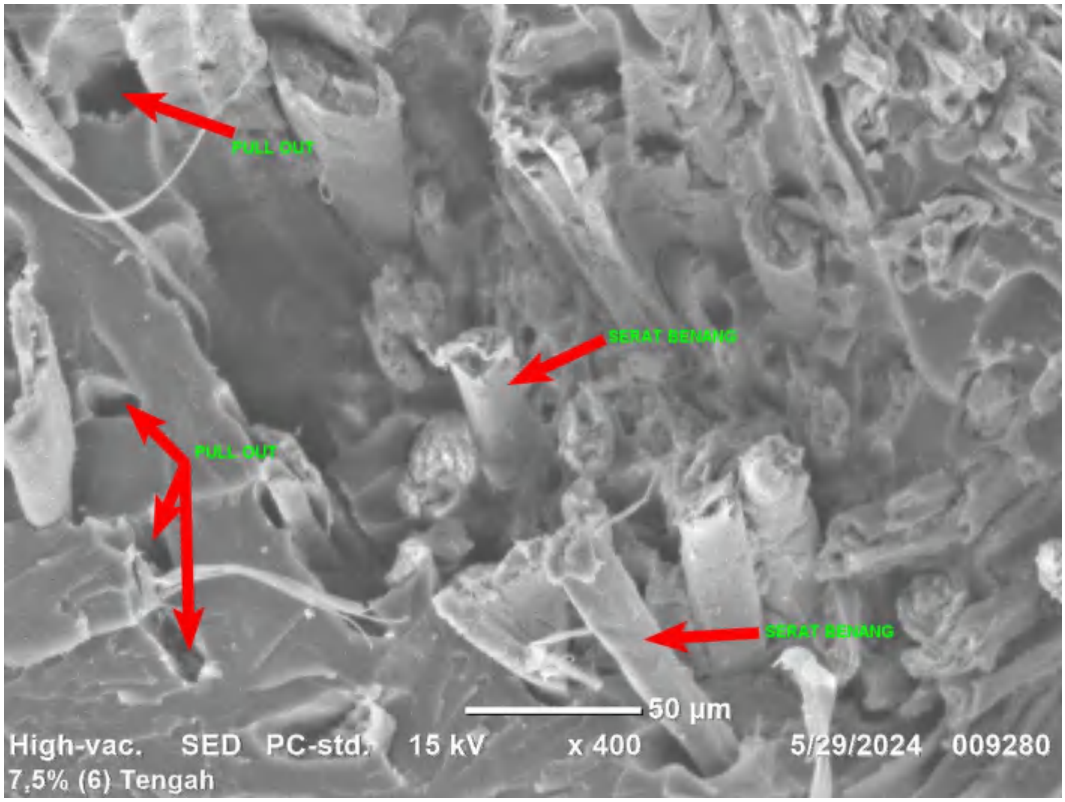
HASIL UJI SEM

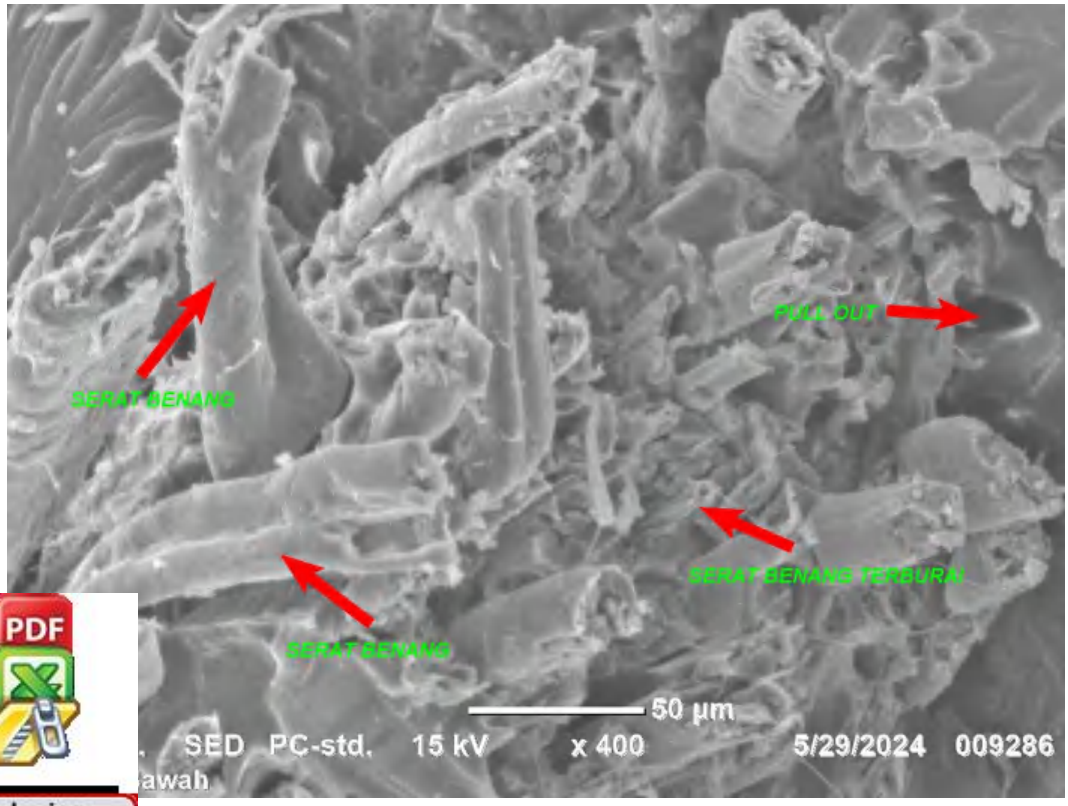


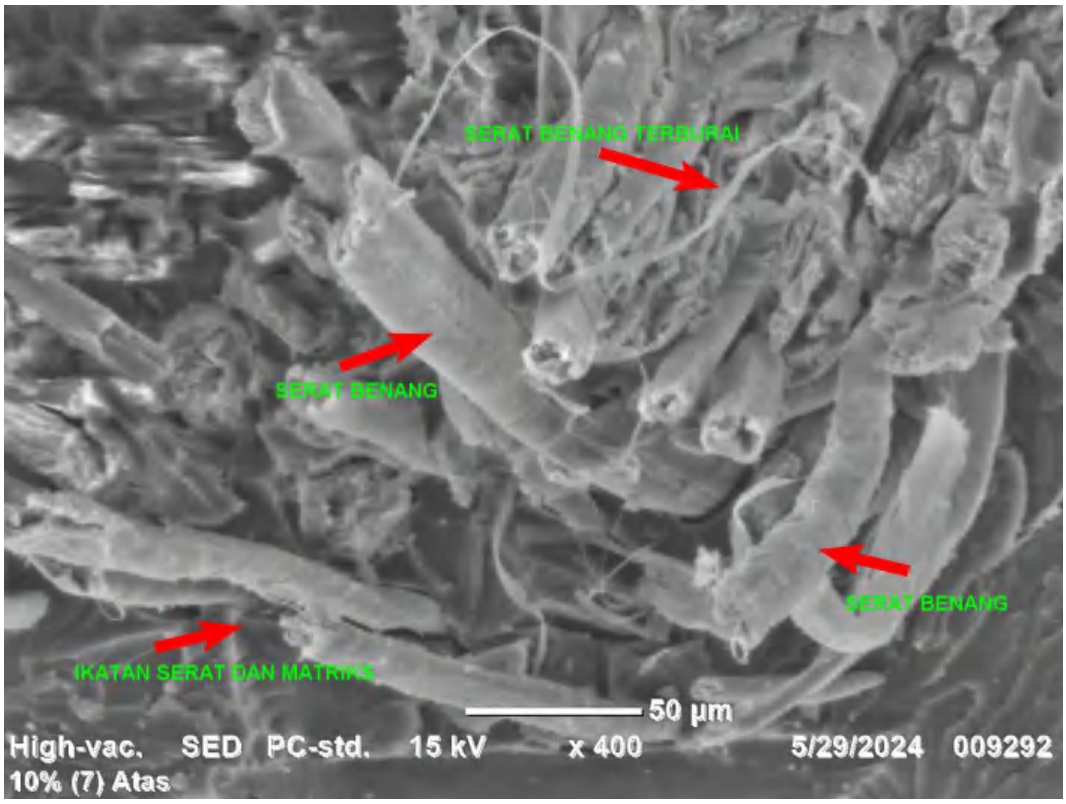


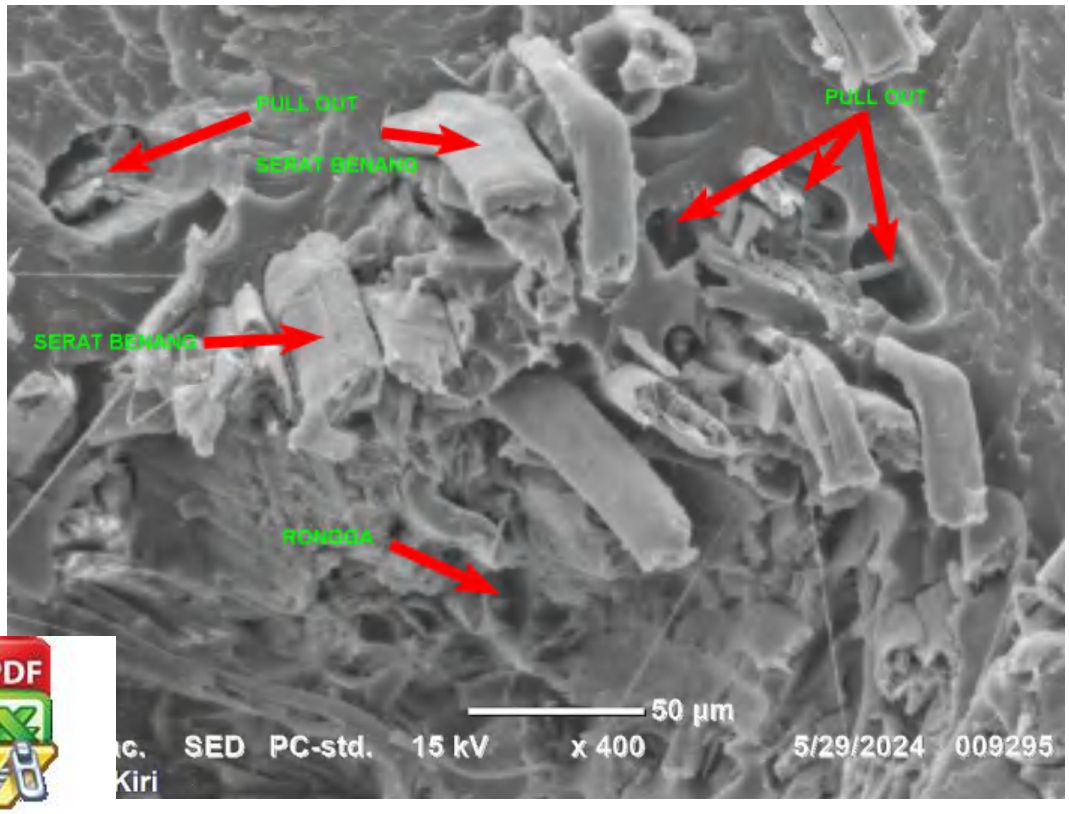












LAMPIRAN IV

A. HASIL ANALISA TAGUCHI UJI TARIK DAN UJI BENDING

HASIL ANALISA TAGUCHI UJI TARIK DAN UJI BENDING

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
	konsentrasi pigmen	lama perendaman	kekuatan tarik	SNRA1	MEAN1	Kekuatan bending	SNRA2	MEAN2	SNRA3	MEAN3
1	0,0	0	42,54	32,5768	42,5441	109,68	40,8025	109,679	40,8025	109,679
2	0,0	2	46,14	33,2820	46,1424	126,13	42,0167	126,135	42,0167	126,135
3	0,0	4	41,48	32,3562	41,4772	138,64	42,8378	138,640	42,8378	138,640
4	0,0	6	42,88	32,6449	42,8788	125,09	41,9443	125,088	41,9443	125,088
5	0,0	8	40,85	32,2232	40,8469	116,90	41,3563	116,901	41,3563	116,901
6	0,0	10	41,75	32,4126	41,7473	142,48	43,0750	142,479	43,0750	142,479
7	0,0	12	43,30	32,7292	43,2973	147,48	43,3746	147,479	43,3746	147,479
8	0,0	14	41,67	32,3967	41,6712	146,22	43,3000	146,217	43,3000	146,217
9	5,0	0	42,76	32,6206	42,7591	95,79	39,6261	95,787	39,6261	95,787
10	5,0	2	47,01	33,4441	47,0113	122,48	41,7611	122,477	41,7611	122,477
11	5,0	4	48,56	33,7251	48,5573	154,68	43,7885	154,676	43,7885	154,676
12	5,0	6	42,74	32,6165	42,7391	128,95	42,2081	128,946	42,2081	128,946
13	5,0	8	38,20	31,6411	38,1993	133,31	42,4972	133,310	42,4972	133,310
14	5,0	10	39,98	32,0367	39,9792	102,85	40,2439	102,848	40,2439	102,848
15	5,0	12	43,06	32,6819	43,0620	137,67	42,7770	137,674	42,7770	137,674
16	5,0	14	38,50	31,7089	38,4987	127,22	42,0909	127,217	42,0909	127,217
17	7,5	0	42,63	32,5934	42,6255	170,83	44,6515	170,834	44,6515	170,834
18	7,5	2	44,54	32,9740	44,5351	108,87	40,7381	108,869	40,7381	108,869
19	7,5	4	46,01	33,2578	46,0140	141,16	42,9939	141,155	42,9939	141,155
20	7,5	6	38,81	31,7787	38,8090	125,35	41,9624	125,349	41,9624	125,349
21	7,5	8	44,22	32,9114	44,2151	142,32	43,0656	142,324	43,0656	142,324
22	7,5	10	36,90	31,3414	36,9037	99,39	39,9467	99,388	39,9467	99,388
23	7,5	12	39,82	32,0025	39,8221	130,41	42,3063	130,411	42,3063	130,411
24	7,5	14	38,90	31,7987	38,8987	105,88	40,4963	105,880	40,4963	105,880
25	10,0	0	44,13	32,8940	44,1263	136,16	42,6810	136,159	42,6810	136,159
26	10,0	2	40,05	32,0512	40,0461	97,24	39,7566	97,237	39,7566	97,237
27	10,0	4	41,62	32,3868	41,6238	125,20	41,9520	125,199	41,9520	125,199
28	10,0	6	41,43	32,3458	41,4274	155,19	43,8174	155,191	43,8174	155,191
29	10,0	8	43,10	32,6897	43,1009	124,14	41,8784	124,143	41,8784	124,143
30	10,0	10	38,43	31,6926	38,4263	111,02	40,9082	111,023	40,9082	111,023
31	10,0	12	41,59	32,3803	41,5926	134,18	42,5539	134,183	42,5539	134,183
32	10,0	14	39,70	31,9755	39,6988	122,24	41,7446	122,245	41,7446	122,245

LAMPIRAN V

A. FOTO KEGIATAN PENELITIAN

1. Proses pembuatan panel sampel uji komposit

2. Proses pengujian