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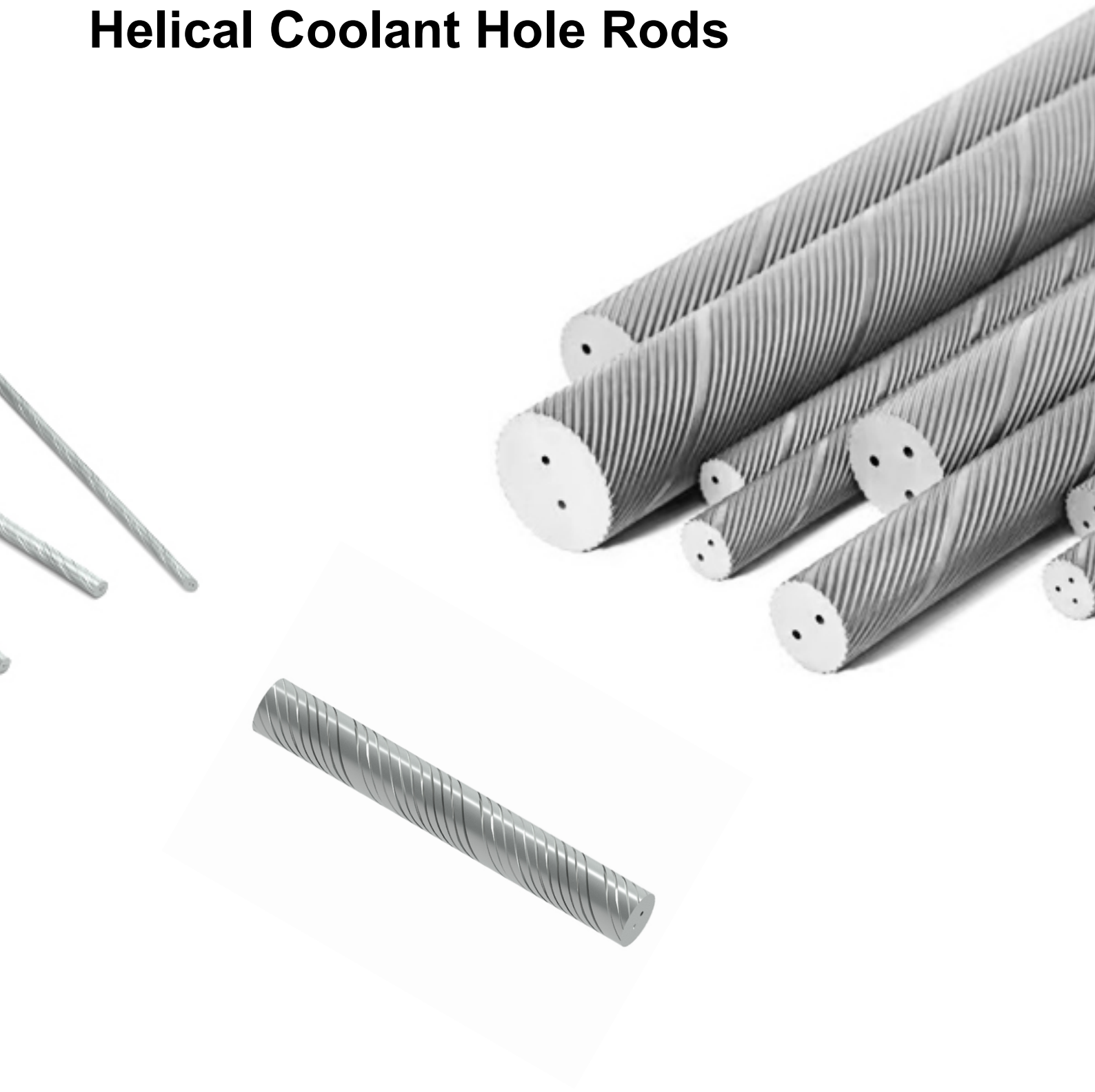
MATERIALS

Tungsten Carbide

Helical Coolant Hole Rods



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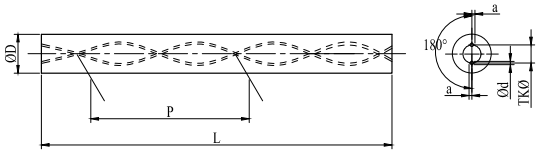
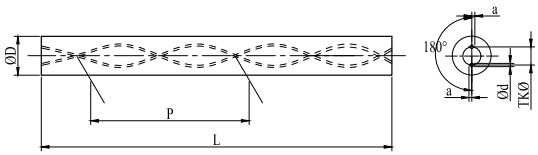
Rods with 2 Helical Coolant Holes (30°)



Type	ØD	L Tol. 0,+5	Ød	Bolt Circle TKØ	±0.5° Pitch			Hole Deviation a
					P	Tol.		
YD301030330040017A	3	330	0.40	1.70	16.32	-0.32	+0.33	0.15
YD301040330060022A	4	330	0.60	2.20	21.77	-0.43	+0.45	0.15
YD301050330070026A	5	330	0.70	2.60	27.21	-0.54	+0.56	0.15
YD301060330070026A	6	330	0.70	2.60	32.65	-0.65	+0.67	0.15
YD301070330100037A	7	330	1.00	3.70	38.09	-0.76	+0.78	0.15
YD301080330100040A	8	330	1.00	4.00	43.53	-0.86	+0.89	0.15
YD301090330140048A	9	330	1.40	4.80	48.97	-0.97	+1.00	0.20
YD301100330140048A	10	330	1.40	4.80	54.41	-1.08	+1.11	0.20
YD301110330140053A	11	330	1.40	5.30	59.86	-1.19	+1.22	0.30
YD301120330140062A	12	330	1.40	6.25	65.30	-1.30	+1.34	0.30
YD301130330175065A	13	330	1.75	6.50	70.74	-1.40	+1.45	0.37

	Unground ØD (mm)		Ground ØD (mm)	
	Range	Tol.	Range	Tol.
Standard	3≤ØD≤6	+0.60, +1.00	3≤ØD≤25	h5/h6
	6＜ØD≤24	+0.70,+1.10		
	ØD=25	+0.80,+1.20		
	Ød (mm)		TKØ (mm)	
	Range	Tol.	Range	Tol.
	0.40≤Ød≤0.90	±0.10	TKØ≤4.00	+0, -0.40
	0.90＜Ød≤1.70	±0.15	4.00＜TKØ≤5.00	+0, -0.60
	Ød=1.75	±0.20	5.00＜TKØ≤10.10	+0, -0.80
	Ød=2.00	±0.25	10.10＜TKØ≤13.30	+0, -1.00

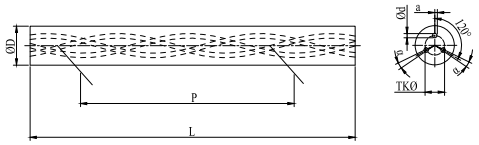
Rods with 2 Helical Coolant Holes (30°)



Type	ØD	(L Tol. / 0,+5)	Ød	Bolt Circle TKØ	±0.5° Pitch			Hole Deviation a
					P	Tol.		
YD301140330175071S	14	330	1.75	7.10	76.18	-1.51	+1.56	0.40
YD301140330190067N	14	330	1.90	6.70	76.18	-1.51	+1.56	0.40
YD301150330175077S	15	330	1.75	7.70	81.62	-1.62	+1.67	0.40
YD301160330175083S	16	330	1.75	8.30	87.06	-1.73	+1.78	0.40
YD301160330210080N	16	330	2.10	8.00	87.07	-1.73	+1.78	0.45
YD301160330250088N	16	330	2.50	8.80	87.06	-1.73	+1.78	0.45
YD301170330175089S	17	330	1.75	8.90	92.50	-1.84	+1.89	0.45
YD301180330200095S	18	330	2.00	9.55	97.95	-1.94	+2.00	0.50
YD301180330280099N	18	330	2.80	9.90	97.95	-1.95	+2.00	0.50
YD301190330200101S	19	330	2.00	10.10	103.39	-2.05	+2.12	0.50
YD301200330200104S	20	330	2.00	10.40	108.83	-2.16	+2.23	0.50
YD301200330250100N	20	330	2.50	10.00	108.83	-2.16	+2.23	0.50
YD301210330200111S	21	330	2.00	11.15	114.27	-2.27	+2.34	0.50
YD301220330200116S	22	330	2.00	11.60	119.71	-2.38	+2.45	0.50
YD301230330200122S	23	330	2.00	12.20	125.15	-2.48	+2.56	0.50
YD301240330200128S	24	330	2.00	12.80	130.59	-2.59	+2.67	0.50
YD301250330200133S	25	330	2.00	13.30	136.03	-2.70	+2.78	0.50

	Unground ØD (mm)		Ground ØD (mm)	
	Range	Tol.	Range	Tol.
Standard	3≤ØD≤6	+0.60, +1.00	3≤ØD≤25	h5/h6
	6 < ØD≤24	+0.70,+1.10		
	ØD=25	+0.80,+1.20		
	Ød (mm)		TKØ (mm)	
	Range	Tol.	Range	Tol.
	0.40≤Ød≤0.90	±0.10	TKØ≤4.00	+0, -0.40
	0.90 < Ød≤1.70	±0.15	4.00 < TKØ≤5.00	+0, -0.60
	Ød=1.75	±0.20	5.00 < TKØ≤10.10	+0, -0.80
	Ød=2.00	±0.25	10.10 < TKØ≤13.30	+0, -1.00

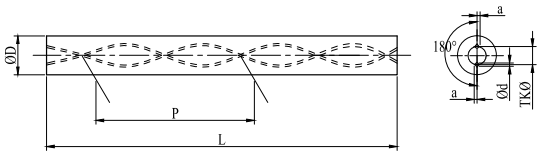
Rods with 3 Helical Coolant Holes (30°)



Type	ØD	L Tol. 0,+5	Ød	Bolt Circle TKØ	±0.5° Pitch			Hole Deviation	
					P	Tol.		a	α
YA3010603300700 27S	6	330	0.70	2.75	32.65	-0.65	+0.67	0.15	±4°
YA301060330050029N	6	330	0.50	2.90	32.65	-0.65	+0.67	0.15	±4°
YA3010803301000 40S	8	330	1.00	4.00	43.53	-0.86	+0.89	0.15	±4°
YA301080330070040N	8	330	0.70	4.00	43.53	-0.86	+0.89	0.15	±4°
YA3011003301400 50S	10	330	1.40	5.00	54.41	-1.08	+1.11	0.20	±4°
YA301100330085051N	10	330	0.85	5.10	54.41	-1.08	+1.11	0.20	±4°
YA3011203301400 60S	12	330	1.40	6.00	65.30	-1.30	+1.34	0.30	±4°
YA301120330110063N	12	330	1.10	6.30	65.30	-1.30	+1.34	0.30	±4°
YA3011403301750 70S	14	330	1.75	7.00	76.18	-1.51	+1.56	0.40	±4°
YA301140330140073N	14	330	1.40	7.30	76.18	-1.51	+1.56	0.40	±4°
YA3011603301750 80S	16	330	1.75	8.00	87.06	-1.73	+1.78	0.40	±4°
YA301160330160083N	16	330	1.60	8.30	87.06	-1.73	+1.78	0.40	±4°
YA3011803302000 95S	18	330	2.00	9.55	97.95	-1.94	+2.00	0.50	±4°
YA301180330170095N	18	330	1.70	9.50	97.95	-1.94	+2.00	0.50	±4°
YA3012003302001 00S	20	330	2.00	10.00	108.83	-2.16	+2.23	0.50	±4°
YA301200330190102N	20	330	1.90	10.20	108.83	-2.16	+2.23	0.50	±4°
YD3012503302001 33S	25	330	2.00	13.30	136.03	-2.70	+2.78	0.50	±4°

	Unground ØD (mm)		Ground ØD (mm)	
	Range	Tol.	Range	Tol.
Standard	3≤ØD≤6	+0.60, +1.00	3≤ØD≤25	h5/h6
	6＜ØD≤24	+0.70,+1.10		
	ØD=25	+0.80,+1.20		
	Ød (mm)		TKØ (mm)	
	Range	Tol.	Range	Tol.
	0.40≤Ød≤0.90	±0.10	TKØ≤4.00	+0, -0.40
	0.90＜Ød≤1.70	±0.15	4.00＜TKØ≤5.00	+0, -0.60
	Ød=1.75	±0.20	5.00＜TKØ≤10.10	+0, -0.80
	Ød=2.00	±0.25	10.10＜TKØ≤13.30	+0, -1.00

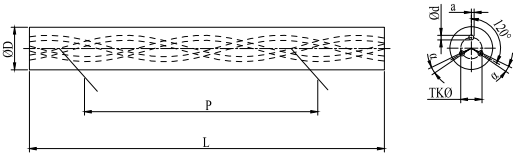
Rods with 2 Helical Coolant Holes (40°)



Type	ØD	L Tol. /0,+5	Ød	Bolt Circle TKØ	±0.5° Pitch			Hole Deviation a
					P	Tol.		
YD4010603300500 22S	6	330	0.50	2.20	22.46	-0.39	+0.40	0.15
YD4010703300650 24S	7	330	0.65	2.40	26.21	-0.46	+0.47	0.15
YD4010803300650 27S	8	330	0.65	2.70	29.95	-0.53	+0.54	0.15
YD4010903300750 32S	9	330	0.75	3.20	33.70	-0.59	+0.60	0.20
YD4011003300800 35S	10	330	0.80	3.50	37.44	-0.66	+0.67	0.20
YD4011103300800 37S	11	330	0.80	3.70	41.18	-0.72	+0.74	0.30
YD4011203300900 42S	12	330	0.90	4.20	44.93	-0.79	+0.80	0.30
YD4011303300900 44S	13	330	0.90	4.40	48.67	-0.85	+0.87	0.37
YD4011403301000 47S	14	330	1.00	4.70	52.42	-0.92	+0.94	0.40
YD4011503301100 51S	15	330	1.10	5.10	56.16	-0.99	+1.01	0.40
YD4011603301200 55S	16	330	1.20	5.50	59.90	-1.05	+1.07	0.40
YD4011703301200 59S	17	330	1.20	5.90	63.65	-1.12	+1.14	0.45
YD4011803301400 63S	18	330	1.40	6.30	67.39	-1.18	+1.21	0.50
YD4011903301400 67S	19	330	1.40	6.70	71.14	-1.25	+1.27	0.50
YD4012003301500 71S	20	330	1.50	7.10	74.88	-1.31	+1.34	0.50

	Unground ØD (mm)		Ground ØD (mm)	
	Range	Tol.	Range	Tol.
	6≤ØD≤20	+1.10 , +1.50	6≤ØD≤20	h5/h6
	Ød (mm)		TKØ (mm)	
Standard	Range	Tol.	Range	Tol.
	0.40≤Ød≤0.60	±0.10	TKØ≤2.20	+0 , -0.40
	0.60 < Ød≤0.90	±0.15	2.20 < TKØ≤2.70	+0 , -0.60
	0.90 < Ød≤1.20	±0.20	2.70 < TKØ≤6.30	+0 , -0.80
	1.20 < Ød≤1.50	±0.25	6.3 < TKØ≤7.1	+0 , -1.00

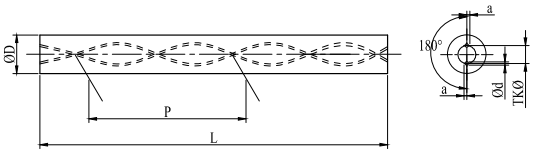
Rods with 3 Helical Coolant Holes (40°)



Type	ØD	L Tol. 0,+5	Ød	Bolt Circle TKØ	±0.5° Pitch			Hole Deviation	
					P	Tol.		a	α
YA4010603300500 22S	6	330	0.50	2.20	22.46	-0.39	+0.40	0.15	±4°
YA4010803300650 27S	8	330	0.65	2.70	29.95	-0.53	+0.54	0.15	±4°
YA4011003300800 35S	10	330	0.80	3.50	37.44	-0.66	+0.67	0.15	±4°
YA4011203300900 42S	12	330	0.90	4.20	44.93	-0.79	+0.80	0.30	±4°
YA4011403301000 47S	14	330	1.00	4.70	52.42	-0.92	+0.94	0.40	±4°
YA4011603301200 55S	16	330	1.20	5.50	59.90	-1.05	+1.07	0.40	±4°
YA4011803301400 63S	18	330	1.40	6.30	67.39	-1.18	+1.21	0.50	±4°
YA4012003301500 71S	20	330	1.50	7.10	74.88	-1.31	+1.34	0.50	±4°

	Unground ØD (mm)		Ground ØD (mm)	
	Range	Tol.	Range	Tol.
	6≤ØD≤20	+1.10 , +1.50	6≤ØD≤20	h5/h6
	Ød (mm)		TKØ (mm)	
Standard	Range	Tol.	Range	Tol.
	0.40≤Ød≤0.60	±0.10	TKØ≤2.20	+0 , -0.40
	0.60 < Ød≤0.90	±0.15	2.20 < TKØ≤2.70	+0 , -0.60
	0.90 < Ød≤1.20	±0.20	2.70 < TKØ≤6.30	+0 , -0.80
	1.20 < Ød≤1.50	±0.25	6.3 < TKØ≤7.1	+0 , -1.00

Other Rods with Helical Coolant Holes



Type	ØD	C	L	Hole Diameter		Bolt Circle		Pitch			Hole Deviation a
				Ød	Tol.	TKØ	Tol.	P	Tol.		
YD151060330070028S	6	15	330	0.70	±0.10	2.80	-0.40	70.35	-2.38	+2.54	0.15
YD151080330125038S	8	15	330	1.25	±0.15	3.80	-0.40	93.80	-3.17	+3.38	0.15
YD151100330140051S	10	15	330	1.40	±0.15	5.10	-0.60	117.25	-3.96	+4.23	0.20
YD151120330155065S	12	15	330	1.55	±0.15	6.55	-0.60	140.70	-4.76	+5.08	0.30
YD151140330190071S	14	15	330	1.90	±0.20	7.10	-0.80	164.14	-5.55	+5.92	0.40
YD151160330210084S	16	15	330	2.10	±0.20	8.40	-0.80	187.59	-6.34	+6.77	0.40
YD151180330230094S	18	15	330	2.30	±0.25	9.40	-0.80	211.04	-7.13	+7.61	0.50
YD151200330250105S	20	15	330	2.50	±0.25	10.50	-1.00	234.49	-7.93	+8.46	0.50
YD361060330060023N	6	36	330	0.60	±0.10	2.30	-0.40	25.84	-0.46	+0.49	0.15
YD431060330050019N	6	43	330	0.50	±0.10	1.90	-0.40	20.40	-0.34	+0.37	0.15
YD431060330060015N	6	43	330	0.60	±0.10	1.50	-0.20	20.40	-0.34	+0.37	0.15
YD361060330080020N	6	36	330	0.80	±0.10	2.00	-0.20	25.84	-0.46	+0.49	0.15
YD331060330090023N	6	33	330	0.90	±0.10	2.30	-0.20	29.00	-0.58	+0.59	0.15
YD461060330050017N	6	46.3	330	0.50	±0.10	1.70	-0.20	18.00	-0.31	+0.32	0.15
YD361060330080020N	6	36	330	0.80	±0.10	2.00	-0.20	25.84	-0.46	+0.49	0.15
YD431060330060015N	6	43	330	0.60	±0.10	1.50	-0.20	20.40	-0.34	+0.37	0.15
YD401060330070019N	6	40	330	0.70	±0.10	1.90	-0.20	22.46	-0.39	+0.40	0.15
YD401060330070020H	6	40	330	0.70	±0.10	2.00	-0.20	22.46	-0.39	+0.40	0.15
YD361080330100034N	8	35.7	330	1.00	±0.10	3.40	-0.20	35.00	-1.28	+1.30	0.15
YD401080330070030N	8	40	330	0.70	±0.10	3.05	-0.30	29.95	-0.53	+0.54	0.15
YD341100330115046H	10	34.3	330	1.15	±0.15	4.60	-0.40	46.05	-0.85	+0.87	0.20
YD321100330135046N	10	32.9	330	1.35	± 0,075	4.60	-0.40	48.56	-0.92	+0.94	0.20
YD331120330150056N	12	33.5	330	1.50	±0.15	5.60	-0.40	57.00	-1.11	+1.05	0.30
YD321120330165056N	12	32.1	330	1.65	±0.15	5.60	-0.40	60.09	-1.15	+1.18	0.30
YD301250330320123N	25	29.4	330	3.20	±0.30	12.30	-0.60	139.39	-2.80	+2.89	0.50

JIANGXI YATECH MATERIALS CO., LTD.

Address: No. 358 Yangtze Avenue, Jiujiang City,
Jiangxi Province, China
E-mail: yatech@yatechmaterials.com