



cowie[®]

PTFT

**Laboratory
Products**



BETTER SYNDICATE CO., LTD.

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The worlds leading specialist for the design and manufacture of PTFE Laboratory Products, including:-

PTFE Labware

and **PTFE Process Chemistry Equipment**

PTFE used in the manufacture of COWIE® PTFE Laboratory Products is pure, virgin material which conforms to FDA and USP Class VI requirements.

PTFE is the material of choice for -

■ Chemical Resistance

The chemical resistance of PTFE is almost total over its working temperature range. Reaction is limited to some compounds with free electrons such as sodium in liquid ammonia and some fluorine compounds at high temperature and pressure. Halogens will penetrate PTFE but without apparent reaction.

■ Thermal Stability

The thermal stability of PTFE is outstanding. The material can be used to ca. 280°C yet there is no embrittlement in liquid helium. Thermal degradation does not commence until about 400°C. PTFE does not melt to form a liquid phase.

■ Insolubility & Purity

The PTFE we use conforms to USP Class VI and FDA requirements and is intrinsically pure and contains no additives. PTFE is insoluble in all known solvents except under extremes of pressure and temperature and will not contaminate media by dissolution.

■ Sterilisation

PTFE can be sterilised by all usual means except gamma radiation.

The worlds largest range of stirrer bars -



- Isostatic encapsulation to eliminate cracks and porosity
- FDA and USP Class VI approved PTFE
- Alnico V and Rare Earth magnet cores
- Polished finish to reduce pick-up and cross contamination

Magnetic stirring is a widely used and long established method for stirring and mixing in liquid media. The process is not only simple and inexpensive, but extremely diverse in the range of application. Examples include: synthetic procedures, drug delivery, chemical analysis, flow control, emulsification, milling and grinding and solid phase extraction.

Magnetic stirring can be used in open and closed systems, over a range of positive and negative pressure, over a broad temperature range and with virtually any chemical reagent. The use of bearings, glands, seals and complex drive mechanisms common to other mixing systems are not required.

Magnetic stirring - Key Points

Material:

PTFE is the material of choice for encapsulation because of its almost total chemical resistance and its wide range of working temperature -200°C to +280°C.

Shape:

It is difficult to quantify the most effective shape for a particular stirring application, some shapes are self-evident, for example, an oval or egg shape for round bottom containers or a flat and triangular shape where a scraping action is required, large containers generally require large stirring bars. For very viscous liquids a vaned stirrer at slow speed is required, while for stirring in shallow dishes a long thin stirrer also at slow speed is effective. Often, however, selection is a matter of choice or trial with various shapes.

Particle Formation and Abrasion:

PTFE is a relatively soft material and the rubbing action against the surface of the container may generate small particles. In an application where the generation of such particles must be avoided, the stirring system must be evaluated before actual use. Generation of particles is reduced by careful selection of the shape of stirrer, ensuring the contact surfaces are smooth and even, not using an over powerful stirring bar or use suspended stirring.

Coupling Effects:

De-coupling in the form of spin-out, tumbling or migration is generally due to weakness in the strength of the magnetic circuit, a mismatch in the sizes of drive magnet and stirrer bar or a stirring speed too high.

Rare Earth Magnets:

Rare Earth Magnets may behave in an erratic manner due to increased strength and may migrate to one of the poles of the drive magnet or tumble with great ease and must, therefore, be selected with great care. Due to the strength of Rare Earth Magnets, there may be an increase in abrasion between the container and stirrer, which may cause increased particle generation.

Sterilisation:

PTFE stirring bars can be sterilised by chemical or thermal means, but not by gamma radiation.

Traceability & Change Control:

Full traceability and change control agreements available on request.

CYLINDRICAL

Cylindrical Stirrer Bars have a smooth, round profile. A popular general purpose stirrer for a wide variety of applications.

Ref No.	L (mm)	Ø (mm)
001.106	6	x 3
.108	8	x 3
.110.6	10	x 6
.112	12	x 4.5
.113.6	13	x 6
.113.8	13	x 8
.113.10	13	x 10
.115	15	x 4.5
.115.6	15	x 6
.120	20	x 6
.120.7	20	x 7
.120.8	20	x 8
.125.5	25	x 5
.125	25	x 6
.125.8	25	x 8
.130	30	x 6
.130.7	30	x 7
.130.8	30	x 8
.135	35	x 6
.140.7	40	x 7
.140	40	x 8
.145	45	x 8
.150	50	x 8
.160	60	x 10
.170	70	x 10
.180	80	x 10
.0120	120	x 12
.0127	127	x 12
.0165	165	x 12



PLAIN

Plain Stirrer Bars have a similar action to cylindrical but give more turbulence at low speed.

Ref No.	L (mm)	Ø (mm)
001.210.6	10	x 6
.212	12	x 4.5
.213.8	13	x 8
.215	15	x 4.
.215.6	15	x 6
.220	20	x 6
.220.7	20	x 7
.225	25	x 6
.225.8	25	x 8
.225.10	25	x 10
.230	30	x 6
.230.7	30	x 7
.235	35	x 6
.235.7	35	x 7
.235.10	35	x 10
.240	40	x 8
.250.7	50	x 7
.250	50	x 8
.250.10	50	x 10
.257	57	x 27
.260.7	60	x 7
.260.8	60	x 8
.260	60	x 10
.265.13	65	x 13
.270	70	x 10
.275	75	x 13
.280	80	x 10
.2108	108	x 27
.2159	159	x 27



PTFE Stirrer Bar dimensions are NOMINAL and are approximately $\pm 5\%$ for Length and $\pm 10\%$ for Diameter of the stated values.

PIVOT RING



Pivot Ring Stirrer Bars are for use in containers with bases that are slightly curved or uneven - the pivot enables the stirrer to adopt the optimum position for stirring.

Ref No.	L (mm)	Ø (mm)
001.308	8	x 3
.312	12	x 4.5
.312.6	12	x 6
.313.8	13	x 8
.315	15	x 4.5
.315.8	15	x 8
.320	20	x 6
.325	25	x 6
.325.10	25	x 10
.330	30	x 6
.335	35	x 6
.340	40	x 8
.345	45	x 8
.350	50	x 8
.357	57	x 24
.360	60	x 10
.370	70	x 10
.375.13	75	x 13
.3108	108	x 24
.3159	159	x 24

OCTAHEDRAL



Octahedral Stirrer Bars use a similar action to Pivot Ring type but with increased turbulence at low speeds.

Ref No.	L (in)	Ø (in)	L (mm)	Ø (mm)
001.513.3	½	x ¼	13	x 3
.513	½	x 5/16	13	x 8
.513.10	½	x ¾	13	x 10
.515	5/8	x 5/16	15	x 8
.522	7/8	x 5/16	22	x 8
.525	1	x 5/16	25	x 8
.525.10	1	x ¾	25	x 10
.528	1 1/8	x 5/16	28	x 8
.538	1 1/2	x 5/16	38	x 8
.538.10	1 1/2	x ¾	38	x 10
.541	1 5/8	x 5/16	41	x 8
.551	2	x 5/16	51	x 8
.551.10	2	x ¾	51	x 10
.564.8	2 1/2	x 5/16	64	x 8
.564	2 1/2	x ¾	64	x 10
.575	3	x ½	75	x 13

COLOURED OCTAHEDRAL



Coloured Octahedral Stirrer Bars are for use where identification is of prime importance.

Note: Coloured PTFE coatings are not as inert as pure PTFE. Suffix R=Red, B=Blue, Y=Yellow

Ref No.	L (in)	Ø (in)	L (mm)	Ø (mm)
001.513-R,B or Y	½	x 5/16	13	x 8
.515-R,B or Y	5/8	x 5/16	15	x 8
.522-R,B or Y	7/8	x 5/16	22	x 8
.525-R,B or Y	1	x 5/16	25	x 8
.538-R,B or Y	1 1/2	x 5/16	38	x 8
.551-R,B or Y	2	x 5/16	51	x 8
.575-R,B or Y	3	x ½	75	x 13

MICRO

Micro Stirrer Bars are for the very smallest containers.
Note: Always use the largest stirrer bar possible.

Ref No.	L (mm)	Ø (mm)
001.802	2	x 2
.803	3	x 3
.805	5	x 2
.806	6	x 3
.807	7	x 2
.808	8	x 1.5
.808.3	8	x 3
.810	10	x 3
.813	13	x 3
.815	15	x 1.5
.820	20	x 3
.830	30	x 3



COLOURED MICRO

Coloured Micro Stirrer Bars for identification purposes.
Note: Coloured PTFE coatings are not as inert as pure PTFE. Suffix R=Red, B=Blue, Y=Yellow

Ref No.	L (mm)	Ø (mm)
001.802-R,B or Y	2	x 2
.803-R,B or Y	3	x 3
.805-R,B or Y	5	x 2
.806-R,B or Y	6	x 3
.807-R,B or Y	7	x 2
.808-R,B or Y	8	x 1.5
.808.3-R,B or Y	8	x 3
.810-R,B or Y	10	x 3
.813-R,B or Y	13	x 3
.815-R,B or Y	15	x 1.5



OVAL

Oval Stirrer Bars are for use in round bottomed flasks.

Ref No.	L (mm)	Ø (mm)
001.610	10	x 5
.615	15	x 6
.620	20	x 10
.625.10	25	x 10
.625	25	x 12
.630.10	30	x 10
.630	30	x 16
.635.13	35	x 13
.635	35	x 16
.640.13	40	x 13
.640	40	x 20
.650.17	50	x 17
.650	50	x 20
.664	64	x 20
.670	70	x 20
.670.25	70	x 25
.670.27	70	x 27
.6100	100	x 30
.6150	150	x 40



OCTOVAL

Octoval Stirrer Bars are an effective stirrer with action similar to Oval/Pivot Ring types.

Ref No.	L (mm)	Ø (mm)	L (in)	Ø (in)
001.3319	19	x 10	¾	x ¾
.3325	25	x 13	1	x ½
.3338	38	x 16	1½	x ⁵/₈
.3341	41	x 19	1⁵/₈	x ¾
.3351	51	x 19	2	x ¾
.3364	64	x 19	2½	x ¾
.3376	76	x 19	3	x ¾



REMOVABLE RING



Removable Ring Stirrer Bars are for use as Cylindrical or Pivot Ring types.

Ref No.	L (mm)	Ø (mm)
001.1712	12	x 8
.1725	25	x 8
.1732	32	x 8
.1738.8	38	x 8
.1738	38	x 10
.1742	42	x 10
.1751.8	51	x 8
.1751	51	x 10
.1775	75	x 12
.17102	102	x 16
.17127	127	x 16
.17150	150	x 19

TAPERED



Tapered Stirrer Bars are an effective stirrer with action similar to Oval/Pivot Ring types.

Ref No.	L (mm)	Ø (mm)
001.1910	10	x 4
.1915	15	x
.1920	20	x 7
.1925	25	x 8
.1930	30	x 8
.1935	35	x 8
.1940	40	x 8
.1945	45	x 8
.1950	50	x 8
.1955	55	x 8
.1960	60	x 8
.1970	70	x 10
.1980	80	x 10

DOUBLE ENDED



Double Ended Stirrer Bars have a double paddle action for efficient stirring plus high stability.

Note: Coloured PTFE coatings are not as inert as pure PTFE.

NATURAL

Ref No.	L (mm)	Ø (mm)
001.1335	35	x 8
.1335	55	x 8

COLOURED

Suffix R=Red, B=Blue, Y=Yellow

Ref No.	L (mm)	Ø (mm)
001.1335-R,B or Y	35	x 8
.1335-R,B or Y	55	x 8

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TRIANGULAR

Triangular Stirrer Bars are effective for dissolving solids and mixing sediments because of the scraper-like action.

Ref No.	L (mm)	Ø (mm)
001.412	12	x 6
.420	20	x 8
.425	25	x 8
.425.14	25	x 14
.435	35	x 9
.440	40	x 14
.450	50	x 12
.455	55	x 14
.480	80	x 14
.4110	110	x 36
.4136	136	x 36



TRIANGLE WITH RIB

Triangle with Rib Stirrer Bars have excellent turbulence at all speeds and can be used on uneven surfaces.

Ref No.	L (mm)	Ø (mm)
001.1812	12	x 6
.1825	25	x 8
.1835	35	x 9
.1850	50	x 12
.1880	80	x 18



WING

Wing Stirrer Bars for effective stirring in small tapered and round bottom test, centrifuge and sample tubes.

Ref No.	Ht (mm)	Ø (mm)	Tube ID (mm)
001.2201.1	9	x 5.5	6 - 7
.2201	11	x 8	9 - 10
.2202	16	x 10	11 - 12
.2203	10	x 13	14 - 15
.2204	20	x 13	14 - 15



GIANT

Giant Stirrer Bars are for use in very large containers.

CYLINDRICAL

Ref No.	L (mm)	Ø (mm)
001.0120	120	x 12
.0127	127	x 12
.0165	165	x 12



PLAIN

Ref No.	L (mm)	Ø (mm)
001.257	57	x 27
.2108	108	x 27
.2159	159	x 27

PIVOT RING

Ref No.	L (mm)	Ø (mm)
001.357	57	x 24
.3108	108	x 24
.3159	159	x 24

TRIANGLE

Ref No.	L (mm)	Ø (mm)
001.480	80	x 14
.4110	110	x 36
.4136	136	x 36

PTFE Retrievers for use with Giant Stirrer Bars - see page 32

CROSS

Cross Stirrer Bars are very stable general purpose stirrers.

Ref No.	Ø (in)	Ø (mm)	Ht (mm)
001.2401	3/8"	10	5
.2402	3/4"	20	8
.2403	1"	25	9
.2404	1 1/4"	30	10
.2405	1 1/2"	38	11
.2406	2"	50	15
.2407	2 3/8"	60	20

CROSSHEAD

Crosshead Stirrer Bars are designed for use with tube-like containers yet very effective as general stirrers.

DOUBLE SIDED

Ref No.	Ht (mm)	Ø (mm)
001.1110	8	x 10
.1114	10	x 14
.1117	13	x 17
.1122	15	x 22
.1130	12	x 30
.1135	12	x 35
.1140	14	x 40
.1160	15	x 60

SINGLE SIDED

Ref No.	Ht (mm)	Ø (mm)
001.1110.1	8	x 10
.1114.1	12	x 14
.1117.1	13	x 17
.1125.1	15	x 25
.1140.1	17	x 40
.1160.1	17	x 60

HUB

Hub Stirrer Bars are very stable stirrers, especially at low speeds.

Ref No.	L (mm)	Ø (mm)
001.2301	45	x 27
.2302	62	x 37
.2303	70	x 37

TUBE

Tube Stirrer Bars are designed for use with 10mm standard cuvettes.

Ref No.	Ht (mm)	Ø (mm)
001.1609	6	x 9

DISC

Disc Stirrer Bars are for use in tubes.

Ref No.	Ht (mm)	Ø (mm)
001.709	6	x 9
.710	6	x 10
.720	10	x 20
.730	12	x 30



SQUARE ECONOMY

Square Economy Stirrer Bars give a highly effective mixing over a wide range of conditions and offer outstanding value.

Ref No.	L (mm)	Ht (mm)
001.1412	12	x 4
.1425	25	x 5.5
.1435	35	x 6
.1450	50	x 7.5



PLAIN ECONOMY

Plain Economy Stirrer Bars give a highly effective mixing over a wide range of conditions and offer outstanding value.

Ref No.	L (mm)	Ø (mm)	L (in)	Ø (in)
001.2912	12	x 3	½	x ⅛
.2925	25	x 8	1	x ⅜
.2940	40	x 8	1⅓	x ⅜
.2950	50	x 8	2	x ⅜



SPHERICAL

Spherical Stirrer Bars are of special interest for tubes and eccentric stirring.

Ref No.	Ø (mm)
001.1512	12



GLASS COVERED

Ref No.	L (mm)	Ø (mm)
001.1206	6	x 5
.1212	12	x 5
.1219	19	x 6
.1225	25	x 6
.1245	45	8
.1250	50	8
.1260	60	8



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'TURBO' STIRRER BARS**Extra power Samarium-Cobalt magnets**

Turbo Stirrer Bars use rare earth magnets to provide significantly increased magnetic strength compared to Alnico magnets and are almost **totally resistant to demagnetisation**. Turbo Stirrer Bars are identified by a **carbon black spot**, which is chemically inert.

Note on using Turbo Stirrer Bars:

The high magnetic coupling power of Rare Earth magnets used in Turbo Stirrer Bars can give rise to erratic stirring effects such as magnet migration and tumbling while the powerful attraction between the stirrer and the drive magnet system can give rise to the formation of PTFE particles caused by abrasion between stirrer magnet and the container base.

TURBO ELLIPTICAL

Ref No.	L (mm)	Ø (mm)
001.2610.RE	10	x 6
.2615.RE	15	x 10
.2625.RE	25	x 14
.2650.RE	50	x 24
.2670.RE	70	x 28

TURBO OVAL

Ref No.	L (mm)	Ø (mm)
001.610.RE	10	x 5
.615.RE	15	x 6
.620.RE	20	x 10
.625.RE	25	x 12
.635.RE	35	x 16
.640.RE	40	x 20
.650.RE	50	x 20
.664.RE	64	x 20

TURBO OCTAHEDRAL

Ref No.	L (mm)	Ø (mm)
001.513.3.RE	13	x 3
.513.RE	13	x 8
.515.RE	15	x 8
.525.RE	25	x 8
.538.RE	38	x 8
.551.RE	51	x 8
.564.8.RE	64	x 8

TURBO CYLINDRICAL

Ref No.	L (mm)	Ø (mm)
001.108.RE	8	x 3
.112.RE	12	x 4.5
.120.RE	20	x 6
.125.RE	25	x 6
.130.RE	30	x 6
.140.RE	40	x 8
.150.RE	50	x 8
.160.RE	60	x 10

'TURBO' STIRRER BARS

Extra power Samarium-Cobalt magnets

TURBO FLUTE

Turbo Flute is a high power multi-faceted stirrer for general use.

Ref No.	L (mm)	Ht (mm)
001.3450.RE	50	x 21



Turbo Block has twin TURBO magnets inserted in a solid body. Very effective stirring especially in viscous media.

Ref No.	Magnet (mm)		Block (mm)			Hole Ø (mm)
	L	Ø	W	Ht	D	
001.32040.RE	40	x 10	34	x 14	x 14	8
.32055.RE	55	x 12	44	x 18	x 14	8
.32090.RE	90	x 24	80	x 30	x 25	13



TURBO BOXED SETS

Turbo Boxed Sets include an assortment of useful sizes of stirrer bar in a re-usable container.

Ref No.	No. of Bars	L (mm)	Ø (mm)	Qty
001.3035.RE	10	10	x 6	3
		15	x 10	3
		25	x 14	3
		50	x 24	1



TURBO CYLINDRICAL

Ref No.	No. of Bars	L (mm)	Ø (mm)	Qty
001.3036.RE	14	8	x 3	2
		12	x 4.5	2
		20	x 6	2
		25	x 6	2
		30	x 6	2
		40	x 8	2
		50	x 8	1
		60	x 10	1



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RETRIEVERS



Retrievers are for the removal of stirrer magnets from vessels of all kinds. The polypropylene version has a hanging ring.

PTFE

Ref No.	L (mm)	Ø (mm)
004.150	150	x 10
.250	250	x 10
.350	350	x 10
.450	450	x 10

PTFE FLEXIBLE

Ref No.	L (mm)	Ø (mm)
004.330F	330	x 10

POLYPROPYLENE

Ref No.	L (mm)	Ø (mm)
004.1300	300	x 10
.1350	350	x 10
.1450	450	x 10

PTFE TURBO

Ref No.	L (mm)	Ø (mm)
004.150.RE	150	x 10
.250.RE	250	x 10
.350.RE	350	x 10
.450.RE	450	x 10

PTFE TURBO - FOR GIANT STIRRER BARS

Ref No.	L (mm)	Ø (mm)
004.2350.RE	350	x 18
.2450.RE	450	x 18

STIRRING RODS



Stirring Rods are available in two versions. Pure PTFE solid rod with tapered end and pure PTFE with mild steel core. The version with steel core can be bent into a permanent shape. Inert and will not scratch, use up to 280°C.

STEEL CORE

Ref No.	L (mm)	Ø (mm)
003.100	100	x 6
.150	150	x 6
.200	200	x 6
.250	250	x 6
.300	300	x 6
.350	350	x 6
.400	400	x 6

SOLID PTFE

Ref No.	L (mm)	Ø (mm)
003.1100	100	x 8
.1150	150	x 8
.1200	200	x 8
.1250	250	x 8
.1300	300	x 8



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