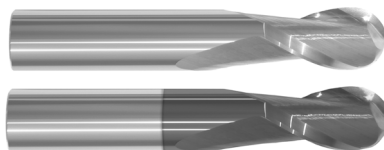


CARBIDE BALL ENDMILLS

C

SOLID CARBIDE ENDMILLS 2 FLUTE, BALL END



American Made Carbide End Mills
At High Speed Steel Prices!

- Premium sub-micron C-2 carbide with 10% cobalt
- Ball end allows for three axis contour slotting and contour finishing
- Available uncoated, Tin coated and TiAIN coated
- Tolerances:
Cutting Dia: +.000/- .002"
Shank Dia: +.0000/- .0005"

Applications:
Slotting and pocketing

Materials:
Uncoated: General purpose milling of all materials
TIN Coated (gold): Increased tool life in milling of all ferrous materials
TiAIN Coated (dark gray): Increased tool life in milling of steels, alloy steels and hardened steels

Full Line Available!
Please call for more information.

Dia.	LOC	Shank Dia.	OAL	Uncoated		TiN Coated		TiAIN Coated	
				Part Number	Price Each	Part Number	Price Each	Part Number	Price Each
1/64	3/64	1/8	1-1/2	MO-BEM001000-2	\$16.36	-	-	-	-
1/32	1/8	1/8	1-1/2	MO-BEM001005-2	\$9.51	MO-BEM001006-2	\$10.59	MO-BEM001016-2	\$11.54
3/64	1/8	1/8	1-1/2	MO-BEM001007-2	\$9.16	MO-BEM001004-2	\$10.24	MO-BEM001013-2	\$11.19
1/16	1/4	1/8	1-1/2	MO-BEM001008AA-2	\$7.75	MO-BEM001002-2	\$8.83	MO-BEM001003-2	\$9.79
5/64	1/4	1/8	1-1/2	MO-BEM001009-2	\$7.75	MO-BEM001008-2	\$8.83	MO-BEM001018-2	\$9.79
3/32	3/8	1/8	1-1/2	MO-BEM001010-2	\$7.75	MO-BEM001011-2	\$8.83	MO-BEM001019-2	\$9.79
7/64	3/8	1/8	1-1/2	MO-BEM001014-2	\$7.75	MO-BEM001015-2	\$8.83	MO-BEM001017-2	\$9.79
1/8	1/2	1/8	1-1/2	MO-BEM001020-2	\$7.46	MO-BEM001021-2	\$8.54	MO-BEM001023-2	\$9.50
9/64	9/16	3/16	2	MO-BEM001024-2	\$10.94	MO-BEM001025-2	\$12.50	MO-BEM001027-2	\$12.98
5/32	9/16	3/16	2	MO-BEM001030-2	\$10.94	MO-BEM001031-2	\$12.50	MO-BEM001033-2	\$12.98
3/16	5/8	3/16	2	MO-BEM001040-2	\$10.13	MO-BEM001041-2	\$11.69	MO-BEM001043-2	\$12.16
7/32	5/8	1/4	2-1/2	MO-BEM001050-2	\$15.27	MO-BEM001051-2	\$18.00	MO-BEM001053-2	\$18.35
1/4	3/4	1/4	2-1/2	MO-BEM001060-2	\$14.34	MO-BEM001061-2	\$17.08	MO-BEM001062-2	\$17.43
9/32	3/4	5/16	2-1/2	MO-BEM001070-2	\$21.26	MO-BEM001071-2	\$24.70	MO-BEM001073-2	\$26.97
5/16	13/16	5/16	2-1/2	MO-BEM001080-2	\$19.53	MO-BEM001081-2	\$22.97	MO-BEM001079-2	\$25.23
11/32	1	3/8	2-1/2	MO-BEM001085-2	\$25.81	MO-BEM001086-2	\$29.25	MO-BEM001087-2	\$31.51
3/8	1	3/8	2-1/2	MO-BEM001090-2	\$26.27	MO-BEM001095-2	\$29.71	MO-BEM001091-2	\$31.97
13/32	1	7/16	2-3/4	MO-BEM001096-2	\$34.55	MO-BEM001097-2	\$40.09	MO-BEM001118-2	\$41.68
7/16	1	7/16	2-3/4	MO-BEM001100-2	\$32.79	MO-BEM001101-2	\$38.32	MO-BEM001119-2	\$39.91
15/32	1	1/2	3	MO-BEM001105-2	\$41.50	MO-BEM001106-2	\$47.03	MO-BEM001123-2	\$48.62
1/2	1	1/2	3	MO-BEM001110-2	\$40.45	MO-BEM001115-2	\$45.98	MO-BEM001117-2	\$47.57
9/16	1-1/4	9/16	3-1/2	MO-BEM001120-2	\$58.98	MO-BEM001121-2	\$67.60	MO-BEM001124-2	\$70.47
5/8	1-1/4	5/8	3-1/2	MO-BEM001130-2	\$70.13	MO-BEM001131-2	\$78.75	MO-BEM001134-2	\$81.61
11/16	1-1/2	3/4	4	MO-BEM001140-2	\$114.53	MO-BEM001141-2	\$124.39	MO-BEM001140-2	\$128.21
3/4	1-1/2	3/4	4	MO-BEM001150-2	\$106.01	MO-BEM001151-2	\$115.87	MO-BEM001154-2	\$119.69
7/8	1-1/2	7/8	4	MO-BEM001155-2	\$158.24	MO-BEM001156-2	\$170.30	MO-BEM001158-2	\$174.97
1	1-1/2	1	4	MO-BEM001160-2	\$169.11	MO-BEM001161-2	\$186.35	MO-BEM001164-2	\$188.83

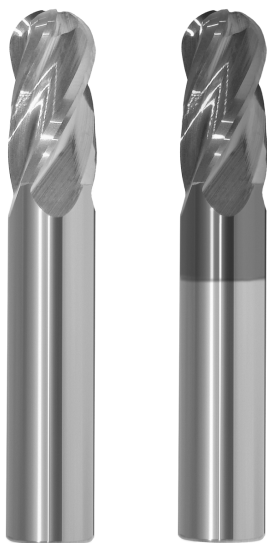
SOLID CARBIDE ENDMILLS 4 FLUTE, BALL END



American Made Carbide End Mills
At High Speed Steel Prices!



- Premium sub-micron C-2 carbide with 10% cobalt
- Ball end allows for three axis contour slotting and contour finishing
- Available uncoated, Tin coated and TiAIN coated
- Tolerances:
Cutting Dia: +.000/- .002"
Shank Dia: +.0000/- .0005"



Dia.	LOC	Shank Dia.	OAL	Uncoated		TiN Coated		TiAIN Coated	
				Part Number	Price Each	Part Number	Price Each	Part Number	Price Each
1/64	3/64	1/8	1-1/2	MO-BEM000998-4	\$16.36	-	-	-	-
1/32	1/8	1/8	1-1/2	MO-BEM000999-4	\$9.51	MO-BEM001003-4	\$10.59	MO-BEM001009-4	\$11.54
3/64	1/8	1/8	1-1/2	MO-BEM001000-4	\$9.16	MO-BEM001004-4	\$10.24	MO-BEM001014-4	\$11.19
1/16	1/4	1/8	1-1/2	MO-BEM001001-4	\$7.75	MO-BEM001002-4	\$9.79	MO-BEM001016-4	\$9.79
5/64	1/4	1/8	1-1/2	MO-BEM001005-4	\$7.75	MO-BEM001006-4	\$8.83	MO-BEM001019-4	\$9.79
3/32	3/8	1/8	1-1/2	MO-BEM001010-4	\$7.75	MO-BEM001011-4	\$8.83	MO-BEM001013-4	\$9.79
7/64	3/8	1/8	1-1/2	MO-BEM001017-4	\$7.75	MO-BEM001052-4	\$8.83	MO-BEM001039-4	\$9.79
1/8	1/2	1/8	1-1/2	MO-BEM001020-4	\$7.46	MO-BEM001021-4	\$8.54	MO-BEM001028-4	\$9.50
9/64	9/16	3/16	2	MO-BEM001025-4	\$10.94	MO-BEM001026-4	\$12.50	MO-BEM001029-4	\$12.98
5/32	9/16	3/16	2	MO-BEM001030-4	\$10.94	MO-BEM001031-4	\$12.50	MO-BEM001032-4	\$12.98
3/16	5/8	3/16	2	MO-BEM001040-4	\$10.13	MO-BEM001041-4	\$11.69	MO-BEM001034-4	\$12.16
7/32	5/8	1/4	2-1/2	MO-BEM001050-4	\$15.27	MO-BEM001056-4	\$18.00	MO-BEM001036-4	\$18.35
1/4	3/4	1/4	2-1/2	MO-BEM001060-4	\$14.34	MO-BEM001062-4	\$17.08	MO-BEM001066-4	\$17.43
9/32	3/4	5/16	2-1/2	MO-BEM001070-4	\$21.26	MO-BEM001065-4	\$24.70	MO-BEM001068-4	\$26.96
5/16	13/16	5/16	2-1/2	MO-BEM001080-4	\$19.53	MO-BEM001082-4	\$22.97	MO-BEM001073-4	\$25.23
11/32	1	3/8	2-1/2	MO-BEM001086-4	\$25.81	MO-BEM001087-4	\$29.25	MO-BEM001115-4	\$31.51
3/8	1	3/8	2-1/2	MO-BEM001090-4	\$26.27	MO-BEM001092-4	\$29.71	MO-BEM001116-4	\$31.97
13/32	1	7/16	2-3/4	MO-BEM001095-4	\$34.55	MO-BEM001097-4	\$40.09	MO-BEM001117-4	\$41.68
7/16	1	7/16	2-3/4	MO-BEM001100-4	\$32.79	MO-BEM001101-4	\$38.32	MO-BEM001118-4	\$39.91
15/32	1	1/2	3	MO-BEM001105-4	\$41.50	MO-BEM001107-4	\$47.03	MO-BEM001119-4	\$48.62
1/2	1	1/2	3	MO-BEM001110-4	\$40.45	MO-BEM001111-4	\$45.98	MO-BEM001114-4	\$47.57
9/16	1-1/4	9/16	3-1/2	MO-BEM001120-4	\$58.98	MO-BEM001125-4	\$67.60	MO-BEM001127-4	\$70.47
5/8	1-1/4	5/8	3-1/2	MO-BEM001130-4	\$70.13	MO-BEM001131-4	\$78.75	MO-BEM001135-4	\$81.61
11/16	1-1/2	3/4	4	MO-BEM001140-4	\$114.53	MO-BEM001155-4	\$124.39	MO-BEM001167-4	\$128.21
3/4	1-1/2	3/4	4	MO-BEM001150-4	\$106.01	MO-BEM001151-4	\$115.87	MO-BEM001154-4	\$119.69
7/8	1-1/2	7/8	4	MO-BEM001157-4	\$158.24	MO-BEM001159-4	\$170.30	MO-BEM001165-4	\$174.97
1	1-1/2	1	4	MO-BEM001160-4	\$169.11	MO-BEM001161-4	\$186.35	MO-BEM001163-4	\$188.83

Call Us Or Visit Our Website For Our Complete Selection!

LATHE CHUCKS
LIVE CENTERS
VISE ACCESSORIES
VISE JAWS
STRAIGHT SHANK
COLLET HOLDERS
TAP HOLDERS
DRILL CHUCKS
CARBIDE INSERTS
THREADING/GROOVING
CUTTING TOOLS
MACHINERY
PRECISION TOOLS
DEBURRING
COOLANT/FLUIDS
TOOL STORAGE

HSS/COBALT BALL ENDMILLS

2 FLUTE BALL NOSE END MILLS

Single End, Regular Length

Faster Feeds & Speeds Than HSS or Cobalt!



- Powdered HSS
- 30° helix with full radius
- For hardened steels up to Rc 45
- Single end, right hand cut
- Flat on shank
- Tank Power coating ideal for applications where cobalt wears rapidly, carbide chips or breaks, or when higher feed rates are desired

R +/--.001	Dia	Shank	LOC	OAL	Uncoated		Tank-Power Coated	
					Part Number	Price	Part Number	Price
R1/16	1/8	3/8	3/8	2-5/16	YG-EME9992008	\$15.87	YG-EME9992008TF	\$24.91
R3/32	3/16	3/8	1/2	2-3/8	YG-EME9992012	\$15.87	YG-EME9992012TF	\$24.91
R1/8	1/4	3/8	5/8	2-7/16	YG-EME9992016	\$15.87	YG-EME9992016TF	\$24.91
R5/32	5/16	3/8	3/4	2-1/2	YG-EME9992020	\$15.87	YG-EME9992020TF	\$24.91
R3/16	3/8	3/8	3/4	2-1/2	YG-EME9992024	\$15.87	YG-EME9992024TF	\$24.91
R1/4	1/2	1/2	1	3	YG-EME9992032	\$25.81	YG-EME9992032TF	\$35.83
R5/16	5/8	5/8	1-3/8	3-1/2	YG-EME9992040	\$39.43	YG-EME9992040TF	\$52.43
R3/8	3/4	3/4	1-5/8	3-7/8	YG-EME9992048	\$51.99	YG-EME9992048TF	\$65.73
R7/16	7/8	7/8	2	4-1/4	YG-EME9992056	\$71.84	YG-EME9992056TF	\$94.11
R1/2	1	1	2-1/4	4-3/4	YG-EME9992064	\$83.14	YG-EME9992064TF	\$103.83

2 FLUTE BALL NOSE END MILLS

Single End, Regular Length



- Single end
- Right hand cut
- Center cutting
- Available in high speed steel or 8% Cobalt M-42



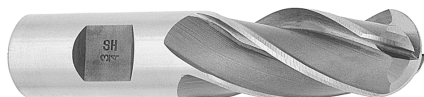
Mill Dia	Shank Dia	LOC	OAL	HSS		Cobalt M-42	
				Part Number	Price Each	Part Number	Price Each
1/8	3/8	3/8	2-5/16	BI-5220-005	\$10.24	-	-
3/16	3/8	1/2	2-3/8	BI-5220-010	\$9.74	BI-5221-010	\$14.72
1/4	3/8	5/8	2-7/16	BI-5220-015	\$9.74	BI-5221-015	\$14.72
5/16	3/8	3/4	2-1/2	BI-5220-020	\$11.52	BI-5221-020	\$16.15
3/8	3/8	3/4	2-1/2	BI-5220-025	\$11.52	BI-5221-025	\$16.15
7/16	1/2	1	3	BI-5220-030	\$15.13	BI-5221-030	\$22.99
1/2	1/2	1	3	BI-5220-035	\$15.13	BI-5221-035	\$24.84
9/16	1/2	1-1/8	3-1/8	BI-5220-040	\$20.66	-	-
5/8	5/8	1-3/8	3-1/2	BI-5220-050	\$23.11	BI-5221-050	\$37.22
3/4	3/4	1-5/8	3-7/8	BI-5220-055	\$27.44	BI-5221-055	\$41.81
13/16	3/4	2	4-1/4	BI-5220-057	\$37.41	BI-5221-057	\$41.81
7/8	7/8	2	4-1/4	BI-5220-060	\$37.41	BI-5221-060	\$42.43
15/16	3/4	2-1/4	4-1/2	BI-5220-065	\$45.82	-	-
1	1	2-1/4	4-3/4	BI-5220-080	\$54.56	BI-5221-080	\$66.78
1-1/8	1	2-1/4	4-3/4	BI-5220-090	\$68.41	BI-5221-090	\$81.58
1-1/4	1-1/4	2-1/2	5	BI-5220-100	\$68.41	-	-
1-3/8	1-1/4	2-1/2	5	BI-5220-105	\$81.58	-	-
1-1/2	1-1/4	2-1/2	5	BI-5220-110	\$85.28	-	-
2	1-1/4	2-1/2	5	BI-5220-120	\$102.65	-	-

MULTI-FLUTE BALL NOSE END MILLS

Single End, Regular Length



- Single end
- Right hand cut
- Available in high speed steel or 8% Cobalt M-42



Mill Dia	Shank Dia	LOC	OAL	No. Of Flutes	HSS		Cobalt M-42	
					Part Number	Price Each	Part Number	Price Each
1/8	3/8	3/8	2-5/16	4	BI-5225-003	\$15.88	BI-5226-003	\$21.15
3/16	3/8	1/2	2-3/8	4	BI-5225-005	\$15.88	BI-5226-005	\$20.78
1/4	3/8	5/8	2-7/16	4	BI-5225-010	\$15.88	BI-5226-010	\$20.78
5/16	3/8	3/4	2-1/2	4	BI-5225-012	\$15.88	BI-5226-012	\$20.78
3/8	3/8	3/4	2-1/2	4	BI-5225-015	\$15.88	BI-5226-015	\$22.80
7/16	3/8	1	2-11/16	4	BI-5225-0181	\$16.78	-	-
1/2	1/2	1-1/4	3-1/4	4	BI-5225-020	\$20.83	BI-5226-020	\$35.40
5/8	5/8	1-5/8	3-3/4	4	BI-5225-025	\$30.84	BI-5226-025	\$47.73
3/4	3/4	1-5/8	3-7/8	4	BI-5225-030	\$50.06	BI-5226-030	\$53.11
7/8	7/8	1-7/8	4-1/8	4	BI-5225-035	\$57.55	-	-
1	1	2	4-1/2	4	BI-5225-040	\$69.57	BI-5226-040	\$90.28
1-1/4	1-1/4	2	4-1/2	6	BI-5225-045	\$82.49	-	-
1-1/2	1-1/4	2	4-1/2	6	-	-	BI-5226-050	\$177.57

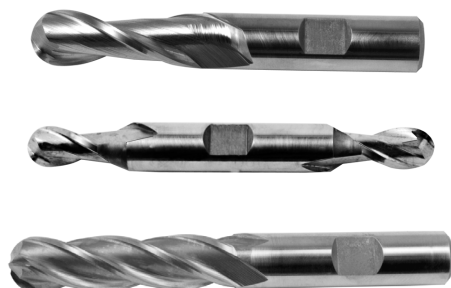
Call Us Today For All Of Your Machine Tool Needs!



BALL NOSE END MILLS

2, 3 & 4 Flute • Cobalt & Carbide

- M42 cobalt or carbide
- 30° helix with full radius
- For general purpose machining
- Single (SE) or double end (DE)
- Uncoated
- Center cutting
- For materials up to 48 Rc
- Additional sizes available



General Information for Endmill Usage:

The Following factors should be kept in mind when using the recommended starting feed per tooth.

Use Higher Feeds For:

- Heavy, roughing cuts
- Rigid set-ups
- Easy to machine work materials
- Rugged cutters
- Slab milling cuts
- Low tensile strength materials
- Coarse tooth cutters
- Abrasive materials

Use Lower Feeds For:

- Light, and finishing cuts
- Frail set-ups
- Hard to machine work materials
- Frail and small cutters
- Deep slots
- High tensile strength materials
- Fine tooth cutters

To Calculate	Given	Formula
Surface Speed in Feet per Minute = SFM	Tool Dia (inches) = D	SFM = (D x 3.1416 x RPM) / 12
	Revolutions per Minute = RPM	
Revolutions per Minute = RPM	Tool Dia (inches) = D	RPM = (SFM x 12) / (D x 3.1416)
	Surface Speed in Feet per Minute = SFM	
Feed Per Revolution in inches = FR	Feed in Inches per Minute = FM	FR = FM / RPM
	Revolutions per Minute = RPM	
Feed in Inches per Minute = FM	Feed Per Revolution in inches = FR	FM = FR x RPM
	Revolutions per Minute = RPM	
Number of Cutting Teeth per Minute = TM	Number of Teeth in Tool = T	TM = T x RPM
	Revolutions per Minute = RPM	
Feed Per Tooth = FT	Number of Teeth in Tool = T	FT = FR / T
	Feed Per Revolution in inches = FR	
Feed Per Tooth = FT	Number of Teeth in Tool = T	FT = FM / (T x RPM)
	Feed in Inches per Minute = FM	
	Revolutions per Minute = RPM	

2 FLUTE BALL NOSE

Dia	LOC	Shank	OAL	Material	Type	Part Number	Price Each
1/32	3/32	3/16	2-1/4	COB	DE	ME-B-601-B	\$25.65
3/64	9/64	3/16	2-1/4	COB	DE	ME-B-601-1/2-B	\$25.65
1/16	3/16	3/16	2-1/4	COB	DE	ME-B-602-B	\$23.80
5/64	15/64	3/16	2-1/4	COB	DE	ME-B-602-1/2-B	\$23.80
1/8	3/8	3/8	3-1/16	CAR	DE	ME-BMG-1204-B	\$39.94
3/16	5/8	3/16	2	CAR	SE	ME-AMG-606-B	\$13.83
3/16	7/16	3/8	3-1/8	COB	DE	ME-B-1206-B	\$29.66
3/16	1/2	3/8	2-3/8	COB	SE	ME-A-1206-B	\$16.61
1/4	5/8	3/8	3-1/2	CAR	DE	ME-BMG-1208-B	\$46.63
1/4	1/2	3/8	3-1/8	COB	DE	ME-B-1208-B	\$30.58
5/16	3/4	3/8	3-1/2	CAR	DE	ME-BMG-1210-B	\$50.10
3/8	3/4	3/8	3-1/2	CAR	DE	ME-BMG-1212-B	\$51.36
3/8	1	3/8	2-1/2	CAR	SE	ME-AMG-1212-B	\$26.52
7/16	1	7/16	2-3/4	CAR	SE	ME-AMG-1414-B	\$38.73
1/2	1	1/2	3	CAR	SE	ME-AMG-1616-B	\$46.24
9/16	1-1/4	9/16	3-1/2	CAR	SE	ME-AMG-1818-B	\$79.48
5/8	1-1/8	1/2	3-1/8	COB	SE	ME-A-1620-B	\$38.56
5/8	1-3/8	5/8	3-1/2	COB	SE	ME-A-2020-B	\$38.56
5/8	2	5/8	4-1/8	COB	SE	ME-A-2020-MB	\$52.33
11/16	1-5/16	1/2	3-5/16	COB	SE	ME-A-1622-B	\$50.46
3/4	1-5/16	5/8	3-7/16	COB	SE	ME-A-2024-B	\$46.35
3/4	1-5/8	3/4	3-7/8	COB	SE	ME-A-2424-B	\$47.70
13/16	1-1/2	1/2	3-1/2	COB	SE	ME-A-1626-B	\$65.26
7/8	1-1/2	1/2	3-1/2	COB	SE	ME-A-1628-B	\$62.41
15/16	1-1/2	1/2	3-1/2	COB	SE	ME-A-1630-B	\$78.94
1	2-1/4	3/4	4-1/2	COB	SE	ME-A-2432-B	\$75.28
1	3	1	5-1/2	COB	SE	ME-A-3232-MB	\$89.02

3 FLUTE BALLNOSE

Dia	LOC	Shank	OAL	Material	Type	Part Number	Price Each
1/16	1/8	1/8	1-1/2	CAR	SE	ME-EMGS-402-B	\$9.05
1/8	1/2	1/8	1-1/2	CAR	SE	ME-EMG-404-B	\$9.59
1/8	3/8	3/8	2-5/16	COB	SE	ME-E-1204-B	\$21.38
3/16	5/16	3/16	1-1/2	CAR	SE	ME-EMGS-606-B	\$11.99
1/4	1/2	1/4	2	CAR	SE	ME-EMGS-808-B	\$14.13
1/4	3/4	1/4	2-1/2	CAR	SE	ME-EMG-808-B	\$17.45
5/16	3/4	3/8	2-1/2	COB	SE	ME-E-1210-B	\$24.04
3/8	3/4	3/8	2-1/2	COB	SE	ME-E-1212-B	\$24.20
7/16	1-3/4	1/2	3-3/4	COB	SE	ME-E-1614-LB	\$41.22
1/2	1-1/4	1/2	3-1/4	COB	SE	ME-E-1616-B	\$36.67
5/8	1-5/8	5/8	3-3/4	COB	SE	ME-E-2020-B	\$52.13
3/4	1-5/8	1/2	3-5/8	COB	SE	ME-E-1624-B	\$60.42
1	1-7/8	3/4	4-1/8	COB	SE	ME-E-2432-B	\$91.48

4 FLUTE BALLNOSE- WITH FLATTED SHANK

Dia	LOC	Shank	OAL	Material	Type	Part Number	Price Each
1/8	3/8	3/8	2-5/16	COB	SE	ME-CC-1204-B	\$25.31
3/16	1/2	3/8	2-3/8	COB	SE	ME-CC-1206-B	\$25.31
1/4	3/4	3/8	2-9/16	COB	SE	ME-CC-1208-B	\$25.31
5/16	1	3/8	2-3/4	COB	SE	ME-CC-1210-B	\$25.31
3/8	1	3/8	2-3/4	COB	SE	ME-CC-1212-B	\$27.27
7/16	1	3/8	2-11/16	COB	SE	ME-CC-1214-B	\$35.83
1/2	1	3/8	2-11/16	COB	SE	ME-CC-1216-B	\$35.83
5/8	1-5/8	5/8	3-3/4	COB	SE	ME-CC-2020-B	\$45.82
3/4	1-5/8	3/4	3-7/8	COB	SE	ME-CC-2424-B	\$59.61
7/8	1-7/8	7/8	4-1/8	COB	SE	ME-CC-2828-B	\$85.18
1	2	1	4-1/2	COB	SE	ME-CC-3232-B	\$101.99

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