AMBEX®
CONCRETE REPAIR SOLUTIONS

AMBEX ANCHORING CAPSULES ARC-E

Chromium Reduced Cementitious Anchoring Capsule for Rebars and Dowels

ARC-E TECHNICAL INFORMATION

DESCRIPTION

Ambex Anchoring Capsules ARC- E are a cementitious non-shrink grout designed for anchoring of rebar or dowels in concrete, masonry or rock. This dry pre-mixed cement grout is encapsulated in a water permeable wrapping and once the grout capsule is saturated in water it becomes a fast setting thixotropic grout and is easily inserted in the anchoring hole. Ambex Anchoring Capsules ARC- E are chromium reduced and are manufactured under strict quality control meeting EC specifications.

USES

Can be used for civil engineering, architectural, masonry, mining or geological projects with plain, threaded or deformed rebars or dowels.

- Structural repairs
- Dams and tunnels
- Bridges
- Highway and airport slabs
- Wharves and canal structures
- Retaining or buildings walls
- Concrete formwork anchors
- Reservoirs and water structures
- Wharves and canal structures
- Mining anchors
- Mining-grout plugs for exploratory holes

ADVANTAGES

- Simple and economical
- Easy to install
- Easy handling and storage
- Reduces installation time and costs
- No product mixing on site
- No special tools and equipment required
- High early strengths
- Can be installed in cold weather
- Thixotropic mix
- Stable water/cement ratio
- No toxic emanation or fumes
- Environmentally friendly
- Does not contain calcium chloride
- Can be used underwater
- Chromium reduced

SIZES

1. Capsule ARC-E-13: 13mm diameter
   200mm long
2. Capsule ARC-E-19: 19mm diameter
   300mm long
3. Capsule ARC-E-25: 25mm diameter
   300mm long

- Additional sizes available on special order.
- Capsule placer available for ARC-E-25.

TECHNICAL INFORMATION

Tests performed by independent laboratories.

		Metric
Net weight dry:	ARC-E-25	± 240g
	ARC-E-19	±145g
	ARC-E-13	±50g
Density (dry)		1.5-1.7 g/cm^3
Compressive strength (ASTM C-109–28 days)	41 MPa	
Water/Cement Ratio		0.36–0.39

Soaking time	1 to 2 min.
Working time 20^{0}C (68^{0}F)	10 min.
Initial setting time (ASTM C-191 Vicat needle)	1h 35 min.
Final setting time (ASTM C-191 Vicat needle)	2h 03 min.
Expansion (ASTM C-1090)	0.03%
Freeze-thaw resistance (ASTM 666-300 cycles,)	100%

PACKAGING

	ARC-E-13	ARC-E-19	ARC-E-25
Capsules per bag	160	45	42
Weight per 1bag	8kg	6.8kg	10.3kg
Bags per skid	132	180	132

GENERAL INFORMATION

- Consult an engineer for structural design and capacity.
- Engineer must evaluate substrate and anchoring conditions.
- Contact Ambex representative if hole sizes and depths differ from chart.
- Underwater: Strength may be reduced by 30% depending on application.
- Cold weather applications may have slower initial setting time.

SAFETY DIRECTIVES

This product contains cement and will react with water. It can inflame eyes and skin. In the case of direct contact with eyes, rinse several times with water, do not rub eyes and see a doctor. Wearing rubber gloves, dust-mask and safety glasses is highly recommended. Keep away from children. The Material Safety Data Sheet (MSDS) is available on request.

STORAGE

Cementitious material is sensitive to humidity. Store in a dry area where there is no humidity or freezing. Shelf life up to 2 years if well protected.

WARRANTY

Ambex Concrete Technologies Inc. warrants that this product will perform as presented when used as described herein. Ambex does not give any other implicit or explicit warranty. Ambex's liability is limited to the replacement of the product proven defective.

1522 Blvd. des Laurentides | Laval, Quebec | Canada H7M 2N7 | Tel 450.662.9147 | Toll Free 1.888.351.7585 | Fax 450.662.9013

AMBEX ANCHORING CAPSULES - ARC-E

www.ambexcorp.com

Nominal rebar size	Recommended hole diameter mm	Capsule size mm	Embedment Depth mm	Fy Ultimate pullout strength KN	Fy/F'y	F'y Yield strength of steel KN
10M	16	13	150	20.8	0.42	30
			200	52.2	1.04	
12M	16	13	150	51.8	0.92	56
			200	75.4	1.33	
16M	19	13	150	96.9	0.96	101
			200	114.4	1.13	
			300	123.3	1.22	
20M	26	19	300	181.2	1.15	157
25M	32	25	300	284.4	1.18	245

* The hole and rebar diameter may vary. Use the smallest hole diameter that allows easy insert of capsule and rebar.
* Tests made at 28 days and 20°C.
* Concrete compressive strength > 35 MPa.
* Steel 500 MPa.
* Tests made by Independant laboratory, Qualitas, Montreal, Qc, Canada.

**Hydraulic jack capacity: 400 KN.

ESTIMATE OF THE NUMBER OF CAPSULES REQUIRED FOR YOUR PROJECT

CALCULATION FORMULA FOR ESTIMATE :

$N = \{3,142*L ((D/2)^2 - (R/2)^2) \} \div V$

R: Rebar diameter in mm
D: Hole diameter in mm
L: Hole depth in mm
V: V= 12.0mm^3 for capsule ARC-E-13
V= 66.0mm^3 for capsule ARC-E-19
V= 110mm^3 for capsule ARC-E-25
N: Minimum number of capsules required (estimate only)

RECOMMENDED INSTALLATION PROCEDURE

1. DRILL ANCHORING HOLES: Drill holes as per recommended minimum dimensions in table above. For faster and easier installation, increase hole diameter up to 6mm greater than the bar diameter for bars up to 25M. For different hole sizes and lengths contact Ambex representative. Ensure proper embedment is respected.

2. CLEAN ANCHORING HOLES: The hole must be clean before inserting the grout capsule. Clean with water pressure or air pressure to eliminate all dust and contaminants. Clean holes from bottom out. Residual water must be removed. Anchoring holes must be clean prior to inserting the grout capsule.

3. SOAK THE GROUT CAPSULES IN WATER: Soak the grout capsules in clean water for 1 to 2 minutes or until bubbles cease coming out of the capsules. Water temperature can be between 2°C (36°F) and 25°C (77°F). In cold weather conditions, water and capsules can be warmed up to 25°C (77°F) to accelerate the setting time of the capsule.

4. INSERT THE GROUT CAPSULE IN THE ANCHORING HOLE: Working time of the grout capsule is about 10 minutes at 20°C (68°F). Twist off end with staple and insert open end in hole. Do not remove wrapping of the capsule. Insert the grout capsule in hole. A capsule can be cut to required length when an anchoring hole does not require a full capsule. The remaining part can be used for another anchoring hole.

5. INSERT BAR IN THE ANCHORING HOLE: Insert bar without rotating it through the capsule that is already in the hole. Use a hammer if required. Do not touch or move bar before final setting time. DO NOT ROTATE REBAR

TECHNICAL SERVICE

AMBEX CONCRETE TECHNOLOGIES INC.
1522 Blvd. des Laurentides,
Laval, Quebec, Canada H7M 2N7
Tel. 450.662.9147 Toll free 1.888.351.7585
Fax 450.662.9013 www.ambexcorp.com
Questions? E-mail us at ambexinfo@ambexcorp.com