

Maine Department of Transportation  
 Qualified Products List of  
 Epoxy and Resin Based Adhesive Bonding Systems (ERB)

| <b>EPOXY ANCHORING MATERIALS</b> Meeting the requirements of AASHTO M235, Type IV.<br>See each product for grade and class information. |                  |              |              |                      |
|---|------------------|--------------|--------------|----------------------|
| Manufacturer  | Product Name     | Grade<br>[1] | Class<br>[2] | Minimum<br>Temp.(°F) |
| Adhesives Technology Corp<br>Pompano Beach, FL<br>(800) 892-1880  | Ultrabond 1      | 3            | A,B,C        | 35                   |
|   | Ultrabond 2      | N/A          | N/A          | 40                   |
|   |                  |              |              |                      |
|   | Ultrabond HS-200 | 3            | A,B,C        | 35                   |

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\*may be used in freezing conditions down to 10°F by keeping resin warm (70-90°F) immediately prior to use.

[1] Grade 2: medium viscosity, Grade 3: non-sagging consistency

[2] Class A: for use below 40°F, Class B: for use between 40°F and 60°F, Class C: for use above 60°F

Type 1 - Anchor bolts size M24 (1") or greater

Type 2 - Anchor bolts smaller than M24 (1")

Type 3 - Reinforcing steel anchors

The products listed above may be used for Types 2 & 3 anchors. For Type 1 anchors contact the Product Evaluation Coordinator at 207-624-3268 or the Bridge Program at 207-624-3490.

NOTE: These products are not to be used for any overhead sustained tension applications. Any sustained tension in non-overhead applications will require pull-out and creep testing according to the Epoxy Anchoring Adhesives Product Acceptance Criteria (see link below). All anchoring adhesives require yearly re-certification by the manufacturer in order to ensure that product names and formulations the same since the product was originally placed on this list and that products are still current and in production. Failure to comply may result in removal from the Qualified Products List.

### **GUIDANCE FOR SELECTING ANCHORING PRODUCTS**

#### **ALL REINFORCING AND ANCHORS**

Proof load testing may be done when any of the following concerns arise:

1. The quality of the installation may not be adequate.
2. The available concrete thickness is not adequate to provide unconfined pullout strength equal to the yield of the anchor.
3. The condition of the concrete is deteriorated, spalled, or cracked.
4. The load requirements for pullout (not shear) are structurally critical.

The following information will be provided on the plans, or in the specifications:

1. Anchor size
2. Anchor spacing and layout
3. Anchor type
4. Unconfined pullout requirement
5. Minimum anchor embedment depth

If this information is not in the contract documents, contact the Bridge Program for this information.

#### **TYPE 2 AND TYPE 3 REINFORCING STEEL < M24 (#8), ANCHORS < M24 (1")**

Any product on the Qualified Products List may be used as long as there is adequate embedment to develop the specified unconfined pullout. The actual depth required varies between products but may not be less than the minimum depth information specified on the plans.

The minimum anchor embedment provided in the contract document is based on the depth required to prevent failure of the existing concrete, not the requirements of the anchoring

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material. Minimum embedment specified is usually based on the assumption that the existing concrete strength is < 3000 psi, and that there is less than 1/2" of deteriorated concrete on the surface. If the concrete appears to be soft, poor, or there is significantly more than 1/2" of deteriorated concrete, check with the Bridge Program to make sure the conditions are accounted for.

TYPE I REINFORCING STEEL > M24 (#9), ANCHORS > M24 (1")

Anchoring material shall be selected from the Qualified Products List and approved by Transportation Research and the Bridge Program. 1 mm = 0.04 inch 1 kN = .225 K

**Product references in MaineDOT's Standard Specifications, November 2014 Edition:**

**SECTION 503 - REINFORCING STEEL**

503.06 Placing & Fastening When specified on the Plans, reinforcing steel shall be anchored into drilled holes. The anchoring material shall be one of the products listed on the Maine Department of Transportation's Qualified Products List, Type 3 Anchoring Materials. Installation shall be in accordance with the manufacturer's published recommendations. Minimum embedment lengths of reinforcing bars shall comply with the manufacturer's published recommendations for the anchoring material selected.

**Section 504 – BRIDGE STEEL ERECTION**

504.42 Bearings and Anchorages If the anchor rods are set in drilled holes, use an anchoring material from the MDOT Qualified Products List. Anchor rods shall be capable of developing unconfined pullout strength of 30 Kips and 70 Kips for 1 inch and 1½-inch anchor rods respectively. The Department reserves the right to perform in-place pullout tests. Replace bolts failing to meet the pullout strength requirements.

**SECTION 523 – BEARINGS**

523.091 Anchor Rods The contractor shall drill the holes and set the anchor rods with a chemical or cementitious Anchoring Material from the MaineDOT Qualified Products List. The Anchoring Material shall completely fill the holes. In place anchor rods shall be capable of developing unconfined pullout strength of 30 kips and 70 kips for M24 and M36, 1 inch and 1-½ inch anchor bolts, respectively.

**PLEASE NOTE:** Products often times may have multiple uses. Products appearing on this particular list are expressly pre-qualified for this category of usage only. Do not use these products for any other application unless this product is noted on other lists.

**Sales Representatives seeking inclusion of their products on this list:**

Please see the Department's Epoxy Anchoring Adhesives Product Acceptance Criteria for all epoxy-based material. All other chemical anchors such as methyl methacrylate, polyester resin, and hybrid products will be reviewed for admission to the Qualified Products List (QPL) on a case-by-case basis.

Re-certification of these products is required five years from the date of prequalification, and every 5 years thereafter in order to remain on the QPL.