

## 1. Pre-Installation Preparation

- **Site Inspection:**
    - Ensure the supporting structure (e.g., concrete walls, steel frames) is clean, level, and free of sharp edges or debris. Verify alignment with design specifications and confirm load-bearing capacity requirements for static or dynamic loads.
    - Check environmental conditions: Avoid installation in temperatures below 5°C or above 40°C to prevent material warping or degradation. High humidity or exposure to corrosive chemicals may require additional protective coatings.
  - **Material Verification:**
    - Inspect [FRP angles](#) for cracks, delamination, or surface irregularities. Confirm dimensions (leg length, thickness, and length) match project requirements.
    - Store angles horizontally on a flat, dry surface with evenly spaced supports to prevent bending or twisting.
  - **Safety Precautions:**
    - Provide workers with PPE: gloves, safety goggles, respiratory masks, and cut-resistant clothing to avoid fiberglass exposure.
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## 2. Required Tools and Materials

Category	Tools/Materials
Cutting Tools	Diamond-coated circular saw, fiberglass-specific cutting blades
Fastening Tools	Stainless steel brackets, epoxy adhesive, galvanized bolts, rubber isolation pads
Alignment Tools	Laser level, measuring tape, spirit level, clamps
Surface Prep Tools	Solvent cleaner (acetone), sandpaper (120–400 grit), wire brush

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### 3. Installation Steps

#### A. Cutting and Shaping

- . Mark cutting lines using a chalk line or non-permanent marker. Secure the FRP angle in a vise to minimize vibration during cutting.
- . Cut from the **outer edge** of the angle using a diamond-coated saw blade to reduce fiber fraying. Deburr cut edges with sandpaper.

#### B. Surface Preparation

- . Clean the FRP angle and contact surfaces (e.g., brackets, supports) with a solvent to remove grease, dust, or contaminants.
- . Roughen smooth surfaces with sandpaper or a wire brush to enhance adhesive bonding.

#### C. Mechanical Fastening

- . Align the fiberglass angle with supports using a laser level. Place rubber isolation pads between the angle and metal surfaces to prevent galvanic corrosion.
- . Secure stainless steel brackets at **300–500 mm intervals** along the length. Tighten bolts evenly in a cross-pattern to avoid distortion.

#### D. Adhesive Bonding (Optional)

- . Mix epoxy resin and hardener according to manufacturer instructions. Apply a uniform layer to mating surfaces.
- . Press the FRP angle into position and hold for 5–10 minutes. Allow 24–48 hours for full curing before applying loads.

#### E. Load Distribution

- Ensure loads are applied evenly across the **vertical leg** of the angle. Avoid concentrated stress on corners or unsupported spans.
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### 4. Key Considerations

- **Load Limits:**
  - Do not exceed the manufacturer's rated bending or shear capacity. Reinforce joints and corners with additional brackets for heavy loads.

- **Environmental Compatibility:**

- FRP angles resist corrosion but require UV-resistant coatings for prolonged outdoor exposure. Avoid direct contact with strong acids, alkalis, or solvents unless explicitly rated.

- **Thermal Expansion:**

- Maintain a **2–3 mm gap** between angles and adjacent structures to accommodate thermal expansion/contraction.
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## 5. Prohibited Actions

- Do not weld, grind, or expose [fiberglass angles](#) to open flames.
  - Avoid stacking heavy materials on unsupported spans to prevent deformation.
  - Never install angles with visible defects (e.g., cracks, delamination).
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## 6. Maintenance Guidelines

- **Cleaning:**

- Clean surfaces with mild detergent and water. Avoid abrasive chemicals or steel wool.

- **Inspections:**

- Check brackets, bolts, and adhesive joints annually for loosening, corrosion, or wear. Replace damaged components immediately.
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This guide emphasizes precision alignment, safe handling, and compliance with structural requirements for FRP angles. Always follow manufacturer specifications and local building codes.