# **EPOCAST**

# Reliable EPOCAST 36<sup>®</sup> Pourable Chocking Compound – A Cornerstone for Large Millimeter Telescope: 12 Years Later

### Problem

The "Large Millimeter Telescope Alfonso Serrano" is the largest single-dish telescope in its frequency range. A joint effort between the United States and Mexico, this instrument was constructed to observe comets, protoplanetary discs, star-forming regions, and the cosmic microwave background.

Systems and objects being explored are thermally cold objects and emit most of their radiation at millimeter wavelengths. Due to the sensitivity of these wavelengths (measuring only 0.85 - 4mm), it's imperative that the alignment of the telescope remains intact and is maintained without vibration to ensure the accuracy of the instruments and the data they are gathering.

# **Application Conditions**

- · Located at 4,850 meters above sea level
- · Sitting on top of the dormant Sierra Negra Volcano in Mexico
- Average Temperature: 22 32°F (-5 0°C)
- Weight: 2,500 tons
- Base Diameter: 164 ft (50 m)

# Solution

The telescope was secured using the EPOCAST 36 pourable chocking compound. Due to the lower temperatures in this region, tenting was required to raise the temperature of the product and equipment prior to pouring. The chocks were poured into the anchor bolts joints from the telescope to the large rails above and on both sides of antenna, which allows the telescope to slew in elevation.

The benefits of the EPOCAST 36 epoxy chock are that they create a reliable, tight fitting underneath the tooth rods despite force from antenna movement. When the antenna moves in elevation, which is where the target can be followed, absolute accuracy in position of the area is achieved.

Once the pour was completed, the grouting system was allowed to sufficiently cure before the torquing of the anchor bolts was completed. This was followed by a software alignment check to ensure the mechanics and electronics were functioning properly in each direction and position of the antenna.



Large Millimeter Telescope Alfonso Serrano from afar



Rail section with Epocast 36

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### **Project Outcome**

Secured to the rail track, the telescope received a reliable connection ensuring continual and precise alignment with minimal vibration, 12 years after the grouting set.

### **High Precision Reliable Alignments**

• Observing these deep space objects require extremely precise and accurate instruments. By utilizing the EPOCAST 36 epoxy chock, the system will retain its precise alignment with minimal maintenance for several more decades.

#### Installation in a Difficult Environment

• The telescope is situated on a dormant volcano 4,850 meters above sea level in a cold environment. EPOCAST 36, a pourable chocking system, was effectively installed in a difficult environment and performed as expected.

#### **Reliable Results**

• EPOCAST 36 pourable chocking compound accommodates the high operation loads of the telescope antenna, required high torques on the mounting bolts, while helping to transfer these energies to the supporting steel construction. This transfer minimizes system vibrations and secures the sensors for accurate, long-range detection.

Utilizing the **EPOCAST 36** pourable chocking system aids in ensuring precision alignment for the Large Millimeter Telescope which has been able to detect organic molecular radiation from 12 million light years away. Some of these organic molecules are unable to be generated on Earth. Proper detection has relied on EPOCAST 36 for 12 years.



System prior to pour



System after pour

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