

**Simprex® M655-200, a unique VE Prepreg highly suitable for Polyester FRP pipes joining**

**Introduction:**

In offshore sites' FRP piping, the most critical technology is the pipes joining technique. Looking to introduce an easy, cost effective, and reliable technique, GCM has developed a unique simple joining method by using heat-activated vinyl ester prepreg.

**Experimental Study:**

Preliminary joining study done on small diameter polyester pipe (100 mm), using **Simprex® M655-200**, has shown outstanding bond strength, as determined by measuring the axial tensile strength, which was 422.8 MPa, versus 218 MPa for the traditional hand wet lay-up joint.

To comply with **BS 5480:1990 & BS 6464:1984**, the external joint of a 700 mm diameter polyester pipes, applied by hand wet lay-up process, used to be about 18 mm thick and 900 mm wide. Based on preliminary small diameter joint results, **Simprex® M655-200** joint for 700 mm diameter was designed to only 13 mm thick and 420 mm wide.

**Results:**

The joint was successfully tested and complied with British Standards (**BS 5480:1990 & BS 6464:1984**), withstanding an internal pressure of 32 bars. Besides the material saving, the novel **Simprex® M655-200** joining method allows huge time and significant overall cost savings.



Simprex® M655-200 joint has been submitted for testing according to the new Standard **BS EN 1796:2006**, where it has to withstand an internal pressure of 48 bars. As shown in the left picture, the connection pipe failed at 44 bars and water leaked through the pipe wall...

**Simprex® M655-200** joint was stronger than the pipe wall!!!



Simprex® M655-200 joint has been submitted again for testing according to the **BS EN 1796:2006** Standard, where it has to withstand an internal pressure of 48 bars. As shown in the left picture, the composite structure, connecting the pipe to the flange, collapsed at 47 bars!!!

**Simprex® M655-200** joint was stronger than the flange structure!!!

**Conclusion:**

GCM's new **Simprex® M655-200** prepreg has shown outstanding performance in joining polyester pipes. The new joining method allows huge time and significant overall cost savings.