

Development of 70Mpa High-Pressure Hydrogen Tank (Type 4)

In passenger cars market, the demand for long FCV tanks is increasing as the ability to install them in the center console allows for greater layout flexibility. Yachiyo is working on the development of longer length hydrogen tanks without sacrificing quality.

Development Elements

Liner development

[Specifications](#)

•Shape optimization

We optimized the shape of the tank, as longer tanks increase shrinkage at low temperatures, which may result in excessive distortion.

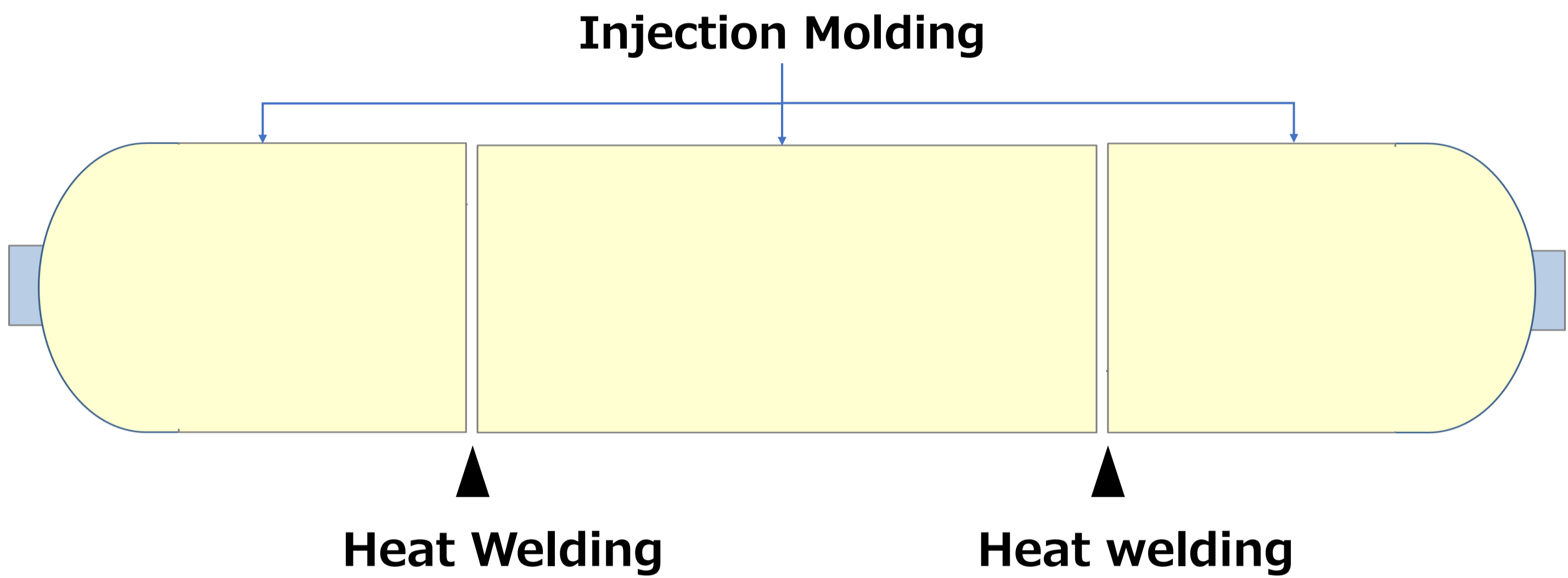
•Lengthening (three-piece welding)

As the high-pressure tank is a critical safety part, we prioritized quality when deciding on specifications and manufacturing methods.

Dome: Injection Molding

Intermediate Cylinder: Injection Molding

Joint: Heat Welding

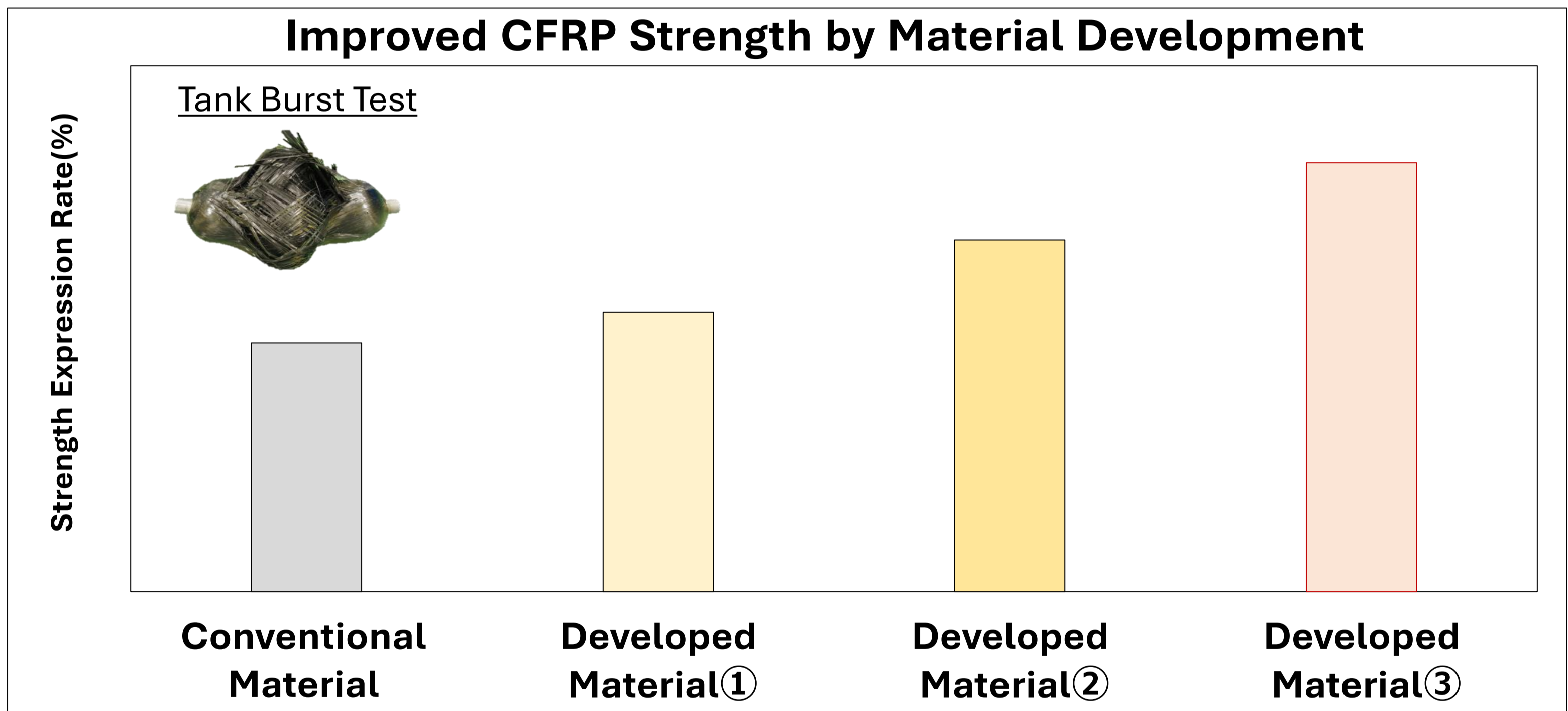


Tow Prepreg Development

[Reductions in weight and cost](#)

•Material Development

CFRP resin physical properties and CFRP strength expression rate improved. FW amount reduced.



※Strength expression rate : $\frac{\text{CFRP [MPa]} \times \text{Vf [%]}}{\text{Fiber stress generated when a tank bursts}} \div \frac{\text{CF[MPa]}}{\text{Stress required for fiber breakage (Theoretical Value)}}$

Overview of Developed Products

<Target Performance Value of Developed Products>



Outer diameter	< Φ450mm
Full length	< 1600mm
Normal pressure	70 MPa
Designed pressure (*GTR phase 2)	>140 MPa
Pressure cycle	> 2,200times
Hydrogen Storage Efficiency	> 6.0 wt%

*GTR phase 2:

Burst pressure requirements currently under consideration in the Hydrogen and Fuel Cell Vehicles UN Global Technical Regulation (HFCV-gtr).

【Future development】

- Expansion of size development
- Acquisition of International Certification
- Survey of Needs/Usage Development

We will continue to strive to meet the needs of our customers, also actively work on developing further usages for hydrogen tanks.