

CFRP

An explanation of Carbon Fiber Epox-Resin Composite Material

ISHIWATA has developed new material for bicycle frame tubing, The CFRP have a high-potential performance, strength and rigidity which excel the performance of steel tubing.

A factor of bicycle frame tubing are high potential fatigue, less flexibility and light weight.

and we demand the process to build up a bicycle frame are simple and positive work.

Brazing process of the steel tubing were fixed but this process spoils the performance of steel tubing by heating, in ordinary a very thin steel tubing have more flexibility, ISHIWATA produces 015, 0.6/0.35 double butted tubing, it's a boundary to use the tubing for bicycle frame, which flexibility are 60% of our 022 0.9/0.6 Double butted tubing.

The CFRP tubing user who can got a good sporting bicycle which are strong and light weight. because the CFRP bears up against 47kg/mm² of fatigue which are double score of Cr-Mo steel tubing, (see bellow fig.)

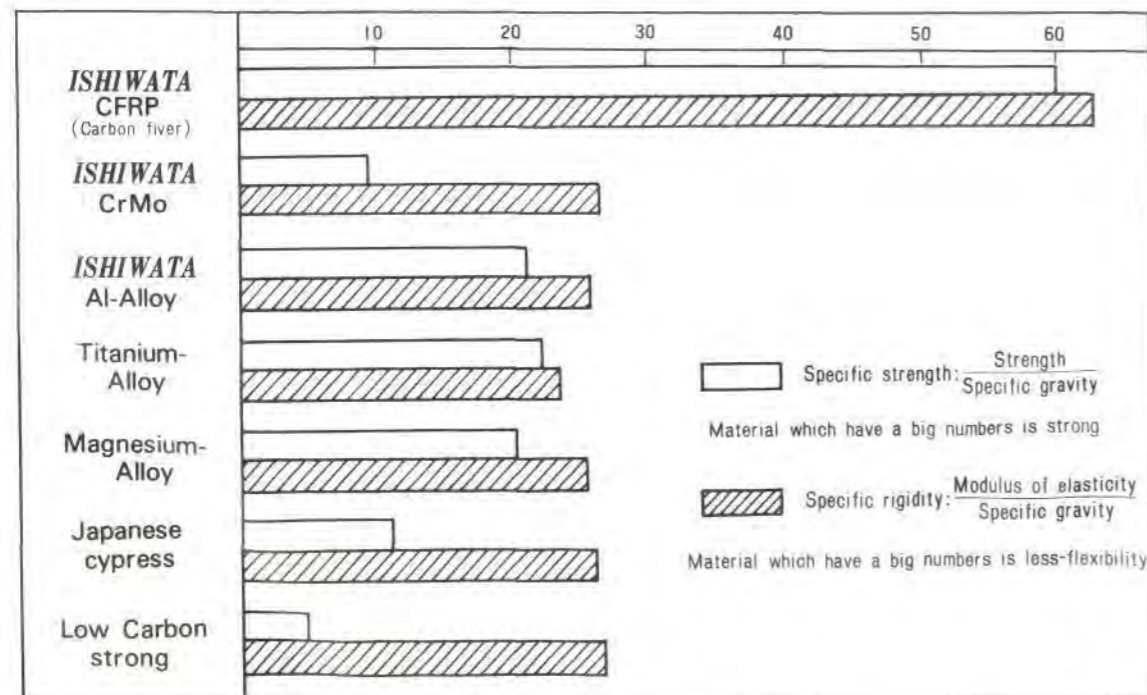
and the CFRP has the oscillation-damping which keep a rider from vibration. The CFRP tubing are suited for road and track racer. ISHIWATA has defined the process to build up the bicycle frame by starch.

The CFRP bicycle frame are produced and sold by ISHIWATA.

STRENGTH OF ISHIWATA CFRP AND CrMo TUBING COMPARATIVE TABLE

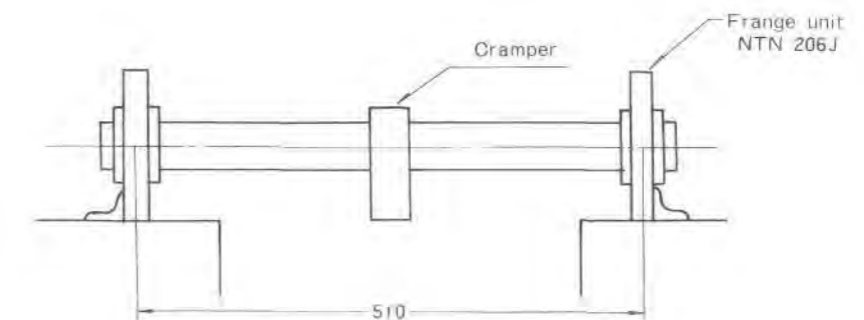
Material Test Program	ISHIWATA CFRP φ28.6×t1.7	ISHIWATA Cr-Mo φ28.6×t0.9/0.6DB	ISHIWATA Cr-Mo φ28.6×t0.6/0.35DB
Length (mm)	610	610	610
Weight (gr)	150	325	200
Bending test Modulus of elasticity t mm ²	12.4×10 ⁴	10.9×10 ⁴	6.5×10 ⁴
Bending test Strength (kg)	530	480	305
Reiterate Bending test Number of fatigue 100kg loaded	160,000Times Pass	160,000Times Pass	62,000Times Distruct
Reiterate Bending test Number of fatigue 150kg loaded	280,000Times Pass	61,000Times Distruct	—

Specific strength and rigidity comparative table



REITERATE BENDING FATIGUE TEST

UF-300 Fatigue tester



- (1) Number of vibration/minutes. 1,000 c/m
- (2) Amplitude ±4mm
- (3) Test under the constant load
- (4) Load lookg, Max 160,000 cycle
We test tube on 150kg. Load which passed on 100kg. Load we stop the test on max number of vibration 280,000 cycle.