

SPACE CARBON CLEATS 90 ©

**Space Carbon Cleat 90 allows the bonding assembly of 2 structures.
It is realized in carbon epoxy and preferentially used for CFRP structures assembly.**

HIGHLIGHTS

- Height: 25 mm
- Length is achieved on demand from 20 to 600 mm
(standard L=50mm)
- θ angle: 90°
- Other section or angle (limited to 45° / 135°)
can be manufactured on demand.

Space Carbon Cleat 90 is manufactured by MECANO ID usually from Carbon fabric / Epoxy resin using RTM process. Its shape and design, patented by MECANO ID have been developed, optimized and validated from previous engineering study and tests.

Compared with a standard corner part in "L" (see at the back), the load transfer via the reinforcement between 2 wings allows a peak constraint reduction in the bonding with a factor 2 to 4 according to the different mechanical loads.

2 versions are proposed with (V2) or without (V1) notches. The notches are implemented to relax the stiffness at the extremities which favor the load transfer in the bonding joint.

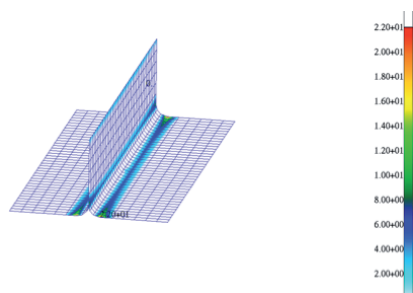
Cleat characteristics (θ angle, length...) are tunable following specifications by choosing adapted basic materials and optimized fiber orientations. Its manufacturing quality could be validated by micrography, acid attack, differential scanning calorimetry (DSC) and quality performance by mechanical test.



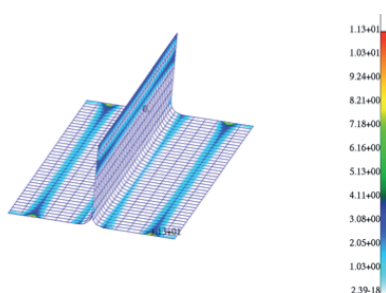
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Load transfer principle

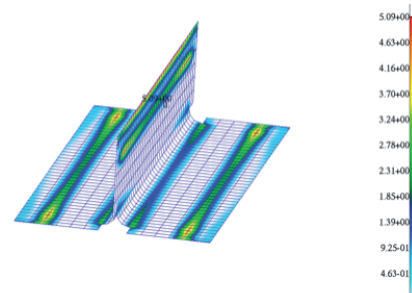
Stress repartition in the bonding joint



Standard corner part



Cleat without notch (V1)



Cleat with notch (V2)

Applicable documents

CURRENT DATASHEET	Space Carbon Cleat 90 v1.1
INTERNAL SPECIFICATION	MID-ZPC-SPT-002 1/0
QUALIFICATION FILE	MID-ZPC-RPT-001 1/0
LAYOUT	MID-ZP0-COM-004 2/0

Dimensions

HEIGHT	25 mm
LENGTH	Achieved on demand from 20 to 600 mm (standard L=50mm)
ANGLE	90°

Other section or angle (limited to 45° / 135°) can be manufactured on demand.

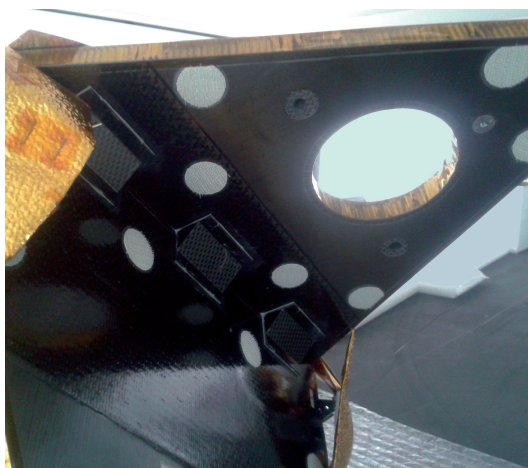
Refer to layout MID-ZP0-COM-004 for full dimensions.

Specifications

TYPICAL FIBER VOLUME RATIO	50%
VOID VOLUME RATIO	VVR< 1%
TEMPERATURE RANGE	-150/+180°C
THERMAL STABILITY	$\alpha = 2.10^{-6} K^{-1}$
DENSITY	1550 gr/m ³

Term of use

The Space Carbon Cleat 90 allows the bonding assembly of 2 structures. It is realized in carbon epoxy and preferentially used for CFRP structures assembly. It avoids the use of inserts in sandwich panels, which reduces at the same time the mass and the cost of the panel. It also ensures a better flux distribution of the interface loads. His homogeneity of dilation with the structures CFRP authorizes a range of temperature wider than titanium inserts.



You need further sizes or mechanical properties? MECANO ID is specialized in design, sizing and manufacturing of high performance composite parts. For any specific need or any question, you could contact us at : contact@mecano-id.fr - +33 534 608 400