

Data format sd_gfibre

Summarized:

The data structure sd_gfibre here is described (produced by the command `DEFI_GEOM_FIBRE`). This command being the only one to produce it, one will use sometimes the vocabulary of this command to describe this data structure.

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1 General information

the data structure *sd_gfibre* (produced by the command `DEFI_GEOM_FIBRE`) contain the definition of one or more groups of fibers used by the "multifibre" elements.

This data structure makes up of *nbgf* groups of fibers. Each group of fibers is defined by an occurrence of the one of the 2 keywords `SECTION` and `FIBER`.

Each group of fibers has a name (given by the user).

Each group of fibers contains a certain number of fibers (*nbfib*)

2 Tree structure

```
sd_gfibre (K8) :
(O)  ".NOMS_GROUPES"      :   OBJ  S   N   K24  long=nbgf
(O)  ".NB_FIBRE_GROUPE"  :   OBJ  S   V   I    long=nbgf
(O)  ".POINTEUR"        :   OBJ  S   V   I    long=nbgf
(O)  ".CARFI"           :   OBJ  S   V   R    long=3*nbfib_tot
(O)  ".GFMA"            :   OBJ  S   V   K8   long=1
```

3 Contained objects *Jeveux*

3.1 Definition of some variables

- *nbgf*: many groups of fibers (= many occurrences of the keywords `SECTION` and `FIBER`).
- *nbfib*: many fibers of a group of fibers.
For an occurrence of `SECTION`, the number of fibers is the number of triangles (`TRIA3`) and quadrangles (`QUAD4`) composing the section.
For a fiber occurrence , the number of fibers is the length of the list provided behind the key word `VALE` divided by 3, because one gives 3 characteristics per fiber.
- *nbfib_tot*: nombre total fibers of the *sd_gfibre* (sum of the numbers of fibers of all the groups of fibers)

3.2 Object `.NOMS_GROUPES`

```
(O) ".NOMS_GROUPES" : OBJ S N K24 long=nbgf
```

This pointer of names contains the name of the groups of fibers (key word `GROUPE_FIBRE`).

3.3 Object `.NB_FIBRE_GROUPE`

```
(O) ".NB_FIBRE_GROUPE" : OBJ S V I long=nbgf
```

$V(igf) = nbfib$: many fibers of the group of fibers *igf*.

3.4 Object `.POINTEUR`

```
(O) ".POINTEUR" : OBJ S V I long=nbgf
```

$V(igf) = ptfib$: "addresses" in `.CARFI` of 1st fiber of the group of fibers *igf*

3.5 Object `.CARFI`

```
(O) ".CARFI" : OBJ S V R long=3*nbfib_tot
```

This vector contains the characteristics of fibers.

The fibers are arranged by "groups of fibers".

For each fiber, 3 characteristics are stored: x y s .

- x : 1st coordinate of the center of gravity of fiber
- y : 2nd coordinate of the center of gravity of fiber

Warning : The translation process used on this website is a "Machine Translation". It may be imprecise and inaccurate in whole or in part and is provided as a convenience.

- s : sectional surface of fiber

Is:

- igf : number of the group of fibers
- $kfib$: number of fiber (in its group)
- $kcara$: number of the characteristic (1,2,3)

$ipoint = .POINTEUR(igf)$

$V(ipoint + 3 \times (kfib - 1) + kcara - 1) = kcara$ ^{ème} characteristic (on 3) of $kfib$ ^{the ème} fiber of the group of fibers igf .

3.6 Object .GFMA

(O) ".GFMA" : OJB S V K8 LONG=1

Contains the name of the total mesh of section created by DEFI_GEOM_FIBRE.