**Test Matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Specimen | Mode mixity | Material | Aims | Load case |
| Sp\_1 | 0 | CE | ①② | Quasi-static (QS) loading at 1 mm/min on DCB specimens until steady state crack growth |
| Sp\_2 | 0 | GE | ①② |
| Sp\_3 | 0.25 | CE | ①② | QS loading at 0.5 mm/min on MMB specimens until steady state crack growth |
| Sp\_4 | 0.25 | GE | ①② |
| Sp\_5 | 0.5 | CE | ①② |
| Sp\_6 | 0.5 | GE | ①② |
| Sp\_7 | 0.75 | CE | ①② |
| Sp\_8 | 0.75 | GE | ①② |
| Sp\_9 | 1 | CE | ①② | QS loading at 0.1 mm/min on ENF specimens until steady state crack growth |
| Sp\_10 | 1 | GE | ①② |
| Sp\_11 | 0 | CE | ④ | QS loading at 1 mm/min on DCB specimens together with AE system until steady state crack growth |
| Sp\_12 | 0 | GE | ④ |
| Sp\_13 | 0.25 | CE | ④ | QS loading at 0.5 mm/min on MMB specimens together with AE system until steady state crack growth |
| Sp\_14 | 0.25 | GE | ④ |
| Sp\_15 | 0.5 | CE | ④ |
| Sp\_16 | 0.5 | GE | ④ |
| Sp\_17 | 0.75 | CE | ④ |
| Sp\_18 | 0.75 | GE | ④ |
| Sp\_19 | 1 | CE | ④ | QS loading at 0.1 mm/min on ENF specimens together with AE system until steady state crack growth |
| Sp\_20 | 1 | GE | ④ |
| Sp\_21 | 0 | CE | ③ | QS loading at 1 mm/min on DCB specimens until load between *Pini-SED* and *Pini-Exp*, , then holding the displacement and stop the test |
| Sp\_22 | 0 | GE | ③ |
| Sp\_23 | 0.25 | CE | ③ | QS loading at 0.5 mm/min on MMB specimens until load between *Pini-SED* and *Pini-Exp*, , then holding the displacement and stop the test |
| Sp\_24 | 0.25 | GE | ③ |
| Sp\_25 | 0.5 | CE | ③ |
| Sp\_26 | 0.5 | GE | ③ |
| Sp\_27 | 0.75 | CE | ③ |
| Sp\_28 | 0.75 | GE | ③ |
| Sp\_29 | 1 | CE | ③ | QS loading at 0.1 mm/min on ENF specimens until load between *Pini-SED* and *Pini-Exp*, , then holding the displacement and stop the test |
| Sp\_30 | 1 | GE | ③ |

**Materials:**

CE: Carbon/Epoxy laminated composite

GE: Glass/Epoxy laminated composite

**Aims:**

① Determine the load of delamination onset from the extracted load-displacement plots

② Measurement of initial crack growth angles

③ Examine the edge of specimens using a digital microscope

④ Investigate the changes of load and energy of each AE hit