

§ 587.13 General description.

The offset deformable barrier is comprised of two elements: a fixed rigid barrier and a deformable face (Figure 1). The fixed rigid barrier is adequate to not deflect or displace more than 10 mm during the vehicle impact. The deformable face consists of aluminum honeycomb and aluminum covering.

§ 587.14 Deformable face component dimensions and material specifications.

The dimensions of the deformable face are illustrated in Figure 1 of this subpart. The dimensions and materials of the individual components are listed separately below. All dimensions allow a tolerance of ± 2.5 mm (0.1 in) unless otherwise specified.

(a) Main honeycomb block.

(1) *Dimensions.* The main honeycomb block has a height of 650 mm (25.6 in) (in the direction of honeycomb ribbon axis), a width of 1,000 mm (39.4 in), and a depth of 450 mm (17.7 in) (in the direction of honeycomb cell axis).

(2) *Material.* The main honeycomb block is constructed of the following material. The honeycomb is manufactured out of aluminum 3003, with a foil thickness of 0.076 mm (0.003 in) ± 0.004 mm (0.002 in) a cell size of 19.14 mm (0.75 in), a density of 28.6 kg/m³ (1.78 lb/ft³) ± 2 kg/m³ (0.25 lb/ft³), and a crush strength of 0.342 MPa (49.6 psi) + 0% - 10%, measured in accordance with the certification procedure described in § 587.15.

(b) Bumper element honeycomb.

(1) *Dimensions.* The bumper element honeycomb has a height of 330 mm (13 in) (in the direction of honeycomb ribbon axis), a width of 1,000 mm (39.4 in), and a depth of 90 mm (3.5 in) (in the direction of honeycomb cell axis).

(2) *Material.* The bumper element honeycomb is constructed of the following material. The honeycomb is manufactured out of aluminum 3003, with a foil thickness of 0.076 mm (0.003 in) ± 0.004 mm (0.0002 in), a cell size of 6.4 mm (0.25 in) ± 1 mm (0.040 in), a density of 82.6 kg/m³ (5.15 lb/ft³) ± 3 kg/m³ (0.19 lb/ft³), and a crush strength of 1.711 MPa (248 psi) + 0% - 10%, measured in accordance with the certification procedure described in § 587.14.

(c) Backing sheet.

(1) *Dimensions.* The backing sheet has a height of 800 mm (31.5 in), a width of 1,000 mm (39.4 in), and a thickness of 2.0 mm (0.08 in) ± 0.1 mm (0.004 in).

(2) *Material.* The backing sheet is manufactured out of aluminum 5251/5052.

(d) Cladding sheet.

(1) *Dimensions.* The cladding sheet of the main honeycomb block has a total length of 1,700 mm (66.9 in), a width of 1,000 mm (39.4 in), and a thickness of 0.81 mm (0.03 in) ± 0.07 mm (0.003 in). It is shaped as indicated in Figure 1.

(2) *Material.* The cladding sheet of the main honeycomb block is manufactured out of aluminum 5251/5052.

(e) Bumper element honeycomb facing sheet.

(1) *Dimensions.* The bumper facing sheet has a height of 330 mm (13 in), a width of 1,000 mm (39.4 in), and a thickness of 0.81 mm (0.03 in) ± 0.07 mm (0.003 in).

(2) *Material.* The bumper element honeycomb facing sheet is manufactured out of aluminum 5251/5052.

(f) *Adhesive.* The adhesive used throughout is a two-part polyurethane. (such as Ciba-Geigy XB5090/1 resin with XB5304 hardener, or equivalent).

§ 587.15 Verification of aluminum honeycomb crush strength.

The following procedure is used to ascertain the crush strength of the main honeycomb block and the bumper element honeycomb, as specified in §§ 587.14(a)(2) and 587.14(b)(2).

(a) *Sample locations.* To ensure uniformity of crush strength across the whole of the deformable face, 8 samples are taken from 4 locations evenly spaced across the honeycomb material. Seven of these 8 samples must meet the crush strength requirements when tested in accordance with the following sections. The location of the samples depends on the size of the honeycomb material being tested. Four samples, each measuring 300 mm (11.8 in) \times 300 mm (11.8 in) \times 25 mm (1 in) thick are cut from the honeycomb material. (See Figure 2 for how to locate these samples on two different sizes of honeycomb material.) Each of these larger samples is cut into samples of the size specified in § 587.15(b). Verification is based on the testing of two samples