



## Fastener Assembly Aid - Temporary Retaining Element, Preapplied

### 1 Introduction

**Note:** Nothing in this standard supercedes applicable laws and regulations.

**Note:** In the event of conflict between the English and domestic language, the English language shall take precedence.

**1.1 Purpose.** This specification covers the basic requirements for a pre-applied temporary retention element. The primary use of this element is to provide a temporary means of holding parts in position during fabrication, assembly, or transportation.

**1.2 Applicability.** This procedure applies to externally or internally threaded fasteners or their mating components.

#### 1.3 Remarks.

**1.3.1 Material Description.** The retention element, in accordance with this specification, shall not lose adhesion or tear loose when the parts are preassembled. The retention element performance and dimensions, such as location, length, and diameter or thickness shall be specified on the engineering drawing.

**1.3.2 Typical Applications.** The retention element is typically applied to externally threaded fasteners, rivets, pins, plugs, and other insertion type parts. It may also be applied to inside diameters of parts, such as nuts and stampings. The product shall be applied 360 degrees on the part unless otherwise specified (Figure 1). The retention element shall form either an interference fit between parts or provide a positive stop to temporarily hold parts in position for assembly.

### 2 References

**Note:** Only the latest approved standards are applicable unless otherwise specified.

#### 2.1 External Standards/Specifications.

None

#### 2.2 GM Standards/Specifications.

GMW3059

GMW14234

### 3 Requirements

#### 3.1 Chemical Requirements.

**3.1.1 Chemical Resistance.** This product must be non-toxic and have moderate resistance to all automotive chemicals such as alcohol, gasoline, engine oils, kerosene, diesel fuel, and hydraulic fluids.

**3.1.2 Recyclability.** Parts with this material shall not have any negative effect on recyclability of the parts.

**3.1.3 Mechanical Requirements.** The product shall have good adhesion to base material. It shall be dry to the touch and exhibit no flaking prior to initial assembly.

#### 3.1.4 Physical Requirements.

**3.1.4.1 Dimensions.** Dimensions and coverage are part and function specific and shall be defined on the engineering drawing. For example, a thickness may be 0.6 mm to 1 mm. On a 10 mm outside diameter part, the resulting outside diameter with the retention element would be 11.2 mm to 12 mm. Length of material may be 0.25 times to 1 times the outside diameter with a tolerance of  $\pm 1$  mm. Full 360 degree coverage is typical, but 180 degree or less coverage is also possible.

**3.1.4.2 Shelf Life.** The product must exhibit a shelf life of no less than one (1) year without evidence of deterioration or becoming hard or brittle.

**3.1.4.3 Pliability.** Items processed in accordance with this specification must be pliable enough to allow assembly at room temperature.

**3.1.5 Insertion/Retention Requirements.** Unless otherwise specified on the engineering drawing, the retention element shall meet the requirements of Table 1. Sample size shall be ten (10) minimum. Retention forces shall be measured immediately after insertion. Reference GMW14234 for ergonomic guidelines for new products.

**Table 1: Insertion/Retention Requirements**

| Thread Size | Mating Hole | Plate Thickness | Maximum Insertion | Minimum Retention |
|-------------|-------------|-----------------|-------------------|-------------------|
|             | -0.00/+0.03 | ± 0.5           |                   |                   |
| M6          | 7 mm        | 9.3 mm          | 100 N             | 85 N              |
| M8          | 9 mm        | 9.3 mm          | 105 N             | 90 N              |
| M10         | 11 mm       | 9.3 mm          | 110 N             | 95 N              |
| M12         | 13 mm       | 9.3 mm          | 195 N             | 175 N             |
| M14         | 15 mm       | 9.3 mm          | 205 N             | 185 N             |

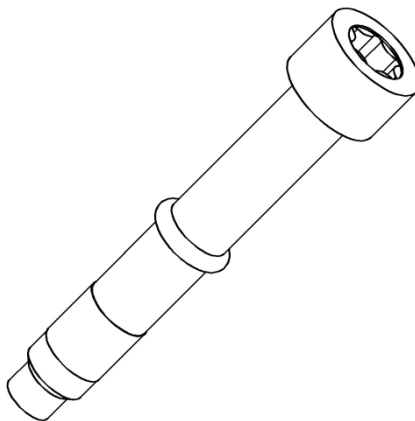


**Figure 1: Retention Element Example**

## 4 Rules and Regulations

**4.1 Legal Regulations.** All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

**4.2 Language.** In the event of conflict between the English and domestic language, the English language shall take precedence.

**4.3 Inspection and Rejection.** Samples of components or materials released to a GM general specification shall be tested for conformity with the requirements of this general specification and approved via Production Part Approval Process (PPAP) approval under Supplier Quality.

Approval requires the supplier to provide evidence that:

- GM's requirements have been understood.
- The part supplied meets those requirements.
- The process (including sub-suppliers) is capable of producing conforming parts/product.