



SURFACE VEHICLE RECOMMENDED PRACTICE

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High-Strength, Hot-Rolled Steel Bars

RATIONALE

This technical report covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

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Foreword—High-strength steel discussed in this SAE Recommended Practice involves hot-rolled bars only. The strength is achieved through chemical composition and rolling practice; it is not achieved through quenching and tempering or additional rolling operations.

- 1. Scope**—This SAE Recommended Practice covers two levels of high strength structural low-alloy steel bars having minimum Yield Points of 345 MPa (50 ksi) and 450 MPa (65 ksi).

The two strength levels are 345 and 450 MPa or 50 and 65 ksi minimum yield point. Different chemical compositions are used to achieve the specified mechanical properties. In some cases there are significant differences in chemical composition for the same strength level, depending on the fabricating requirements.

It should be noted that although the mechanical properties for a steel grade sourced from different suppliers may be the same, the chemical composition may vary significantly. The fabricator should be aware that certain compositional differences may effect the forming, welding, and/or service requirements of the material. It is therefore recommended that the fabricator consult with the producer to understand the effect of chemical composition.

The products within the scope of this document include bars of the following types and sizes:

Rounds, squares, and hexagons of all sizes (cut length only), flats 5.2 mm (0.203 in) and greater in thickness but not greater than 150 mm (6 in) wide, and flats greater than 5.8 mm (0.229 in) thick and over 150 mm (6 in) to 204 mm (8 in) wide.

This document previously covered plates, structural shapes, and bar size shapes of Grades 290A, 345A, 415A, 450A, 345W, 345F, 415F, 485F, and 550F as well as bars of Grades 290A, 415A, and 345W. These products are no longer covered; requirements for these products and grades can be found in ASTM Specifications as follows in Table 1: