American Iron and Steel Institute

FACT SHEET

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The Bumper Group

The Bumper Group is a team of steel producers, bumper manufacturers and automotive manufacturers dedicated to the development of steel material for automotive bumper systems. This team is a subcommittee of the American Iron and Steel Institute's Automotive Applications Council. The Bumper Group focuses on understanding the current and new automotive requirements that create technological and design challenges. Information sharing of new steel developments and bumper manufacturing processes feeds research and development projects which provide new and innovative design and manufacturing solutions. This effort enables steel bumpers to meet vehicle manufacturers' requirements at lower mass and less cost.

Types of steel bumpers:

- **Roll-formed bumpers:** representing more than 70 percent of the steel bumper market in North America, roll-formed bumpers are typically manufactured from cold-rolled ultra high-strength steel (UHSS). The UHSS has a tensile range of 860 to 1500 Megapascal (MPa) and thickness range of 1.1 to 2.0 mm. The most common UHSS grades used for roll-formed bumpers include recovery annealed, dual phase 980 and martensitic steel.

- **Hot-stamped bumpers**: with nearly 10 percent of the steel bumper market in North America, hot-stamped bumpers can be manufactured from either aluminized or uncoated manganese boron steel (MnB) steel. The MnB steel has a minimum tensile strength of 1500 MPa after hot stamping. Both hot-rolled and cold-rolled MnB steels are used for hot-stamped bumpers with a thickness range of 1.0 to 4.0 mm.

- **Hybrid bumpers**: Bumpers using ACCRA® technology or similar combines features of hot-stamped and roll-formed bumpers.

- **Exposed Bumpers** (sometimes called Facebars): commonly used on light-, medium- and heavy-duty trucks; exposed bumpers include nearly 20 percent of the steel bumper market. Exposed bumpers are typically stamped from mild- or high-strength low-alloy steels with tensile strengths up to 500 MPa. Material thicknesses range from 1.6 to 2.3 mm. Because these bumpers are visible to the customer, typically cold-rolled steel is used to improve surface quality. Exposed bumpers are polished either prior to or after the stamping process. They are typically chrome-plated or painted on the exposed surfaces to satisfy customer preference.

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Steel bumpers:

- Made up more than 70 percent of the automotive bumpers on the 14.93 million vehicles sold in North America in 2021;
- Enable vehicles to meet low and high-speed crash requirements;
- Use advanced steel grades and manufacturing processes that enable automotive manufacturers to meet current and future safety requirements;
- Enable competitive design solutions that reduce cost and mass; and
- Include the world's most recycled material – steel.

Steel bumper design manual:

AISI and the Bumper Group released *Steel Bumper Systems for Passenger Cars and Light Trucks* – 8th Edition. This edition is an in-depth report on steel bumper systems, including information related to material properties, manufacturing and product design. This new release contains benchmarking information, updates on sustainability and practical considerations for electric vehicle applications.

This release contains valuable resources including:

- Steel Bumper System Design Manual - 8th Edition
- Overview Presentation & Benchmarking Summary

Download the new Design Manual: *Steel Bumper Systems for Passenger Cars and Light Trucks* – 8th Edition at https://www.steel.org/steel-markets/automotive/bumpers

The Bumpers Group members currently include:

- AGS Automotive Systems
- Amino North American Corporation
- ArcelorMittal
- Benteler Automotive
- Cleveland-Cliffs, Inc.
- Cosma International
- Flat Rock Metal, Inc.
- Flex-N-Gate
- Ford Motor Company
- General Motors Company
- Multimatic Engineering Services
- Nucor Corporation
- Shape Corporation
- Stellantis

For more information, visit www.autosteel.org.

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