The advantages of heat-treatable aluminium sheets (good formability in as-delivered condition and strength increased by subsequent heat treatment) have made this alloy class the leading lightweight material in car body engineering.

When it comes to the chassis, the situation has been different so far. The aluminium sheet solutions used in the chassis have been based on work hardening 5xxx-alloys, which do not have the same high strength potential as heat-treatable 6xxx-alloys.

Consistently tapping to the full the lightweight potential in chassis engineering is of particular technical interest. In addition to the well-known advantages of lightweight design, the reduction of so-called unsprung weight (wheels, brakes, wheel mounting, parts of the suspension) has a direct impact on the chassis performance and suspension comfort of the vehicle.

The high chassis-specific requirements resulting from production conditions and safety-related operational requirements are to be taken into account when selecting the materials.

Axles and subframes are complex-shaped components and welded assemblies. When welded, the materials used must withstand high static and dynamic loads and must ensure that these properties are maintained during operation at elevated temperatures and under corrosion attack, throughout the vehicle’s service life. Furthermore, tolerant overload response must be guaranteed to allow a certain plastic deformation to occur without rupture.

The heat-treatable AMAG 6082.9 alloy was developed with a view to meeting that complex requirements specification. In as-delivered condition, the material has good formability and can be welded by conventional methods. Subsequent artificial aging of the assemblies on the customer’s premises ensures that a yield strength of at least 260 MPa is achieved, and so this material outperforms the classical 5xxx-alloys by a factor of two and, thus, provides a basis for a superior lightweight potential.

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The complete production chain, from casting and rolling to heat treatment in aviation-certified continuous furnaces, ensures constant product quality at the highest level at AMAG’s Franzhoufen location.

Special alloys for high-tech applications are created in cooperation with AMAG’s customers, essential criteria being the requirements in processing and the material behavior in daily use.

AMAG - Competence in production of heat-treatable alloys
- The complete production chain, from casting and rolling to heat treatment in aviation-certified continuous furnaces, ensures constant product quality at the highest level at AMAG’s Ranshofen location.
- AMAG’s unique competence in continuous heat treatment of strips of thicknesses up to max. 8 mm opens up a wide range of possible applications.
- Its distinctive know-how in the manufacture of special products for varied applications and the resulting synergies enable AMAG to provide pinpoint solutions to create the highest customer value.

Chassis components
Range of requirements for aluminium sheets (selection)
- Application
  - static strength
  - dynamic fatigue strength
  - corrosion resistance
  - thermal stability
  - ductile overload behavior
- Processing
  - formability
  - weldability
  - thermal hardenability

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