

Keeping ahead of demand with no compromises!

Constellium's range of products has improved properties across the board. From dent- and corrosion-resistance to hemming and deep drawing, our products demonstrate excellence, both in terms of in-service performance and processability.

No Compromise with Aesthetics!

SURFALEX®

High-tech outer alloys with exceptional surface quality

SURFALEX® HF

High formability for deep stamped parts

SURFALEX® HS

Higher strength for further downgauging



No Compromise with Design!

5754 / 5182 / 5182 SSF

Inner alloys for car body construction

6016X / 6016DRX

Inners alloys with bake hardening effect

FORMALEX® REMOTE

Monolithic alloy solution for remote laser welding

FORMALEX® PLUS

Ultra high formability for complex shapes



No Compromise with Safety!

SECURALEX®

Crashable alloy for structural parts

SECURALEX® HS

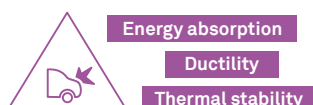
Crashable alloy with high strength

SECURALEX® UHS

Crashable alloy with ultra high strength

SECURALEX® P5/P6

Pedestrian safety alloy



No Compromise with Light-weighting!

CORALEX®

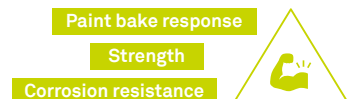
Structural alloy with excellent corrosion behavior

STRONGALEX®

Structural alloy with high strength

ULTRALEX®

Ultra high strength aluminium



Constellium's Aluminium Automotive Body Sheet: the perfect fit with current and future customers' needs.

SURFALEX® for excellent surface aspects

Surfalex® has a perfect surface and balanced properties (formability, hemming, strength in service) for outer skin applications as well as visible inners. Surfalex® allows the most sophisticated and audacious designs including sharp lines, while keeping a perfect surface aesthetics. We have developed a more formable version, Surfalex® HF, which is suited for deep drawn visible inners such as side panels. Surfalex® HS is a stronger version of Surfalex® for further downgauging of outers with the same forming and hemming performance.

SECURALEX® for crash alloys with energy absorption

Constellium's Securalex® product range is a family of high-tech crash alloys with controlled energy absorption for passenger protection in case of collision. We are currently working on extending the Securalex® range with higher strength versions. The product range comprises Securalex®, a crash-crushable alloy and Securalex® P5/P6, which is ductile with stable strength value for greater pedestrian safety. Securalex® HS and Securalex® UHS are a stronger version of Securalex® allowing for further downgauging of crash parts with the same crash performance.

FORMALEX® for optimized forming of complex inners

Constellium's Formalex® has been optimized in terms of composition and processing conditions to give the best possible press formability while maintaining good corrosion resistance. Thanks to its increased work hardening, it achieves significant improvements in stamping performance as well as in laboratory formability tests. Formalex® Plus is a breakthrough lightweighting solution for body-in-white compared to high formable mild steel. Formalex® Remote enables remote laser welding for joining complex part with a single alloy solution. It helps reducing production cycle times at the OEMs.

STRONGALEX® for high-strength of structural parts and reinforcements

Constellium's Coralex® is a structural alloy for chassis and inner structural parts. Offering an excellent corrosion resistance, including in case of thermal exposure. Strongalex® is a balanced property alloy which has good formability and a typical in-service yield strength of 270 MPa. Strongalex® allows for the downgauging of strength-limited parts in the body structure. Our innovation work focuses on drastically increasing the level of strength. Ultralex® enables further lightweighting in comparison with ultra high strength steel, with the same performance.

Constellium's capabilities

Our range of finishing capabilities allows us to deliver even greater value in a variety of contexts: surface topography, shapes, lubrications, pre-treatments.

	Dimensions				Surface condition			Surface condition			
	Maximum width	Thickness	Cut to length		EDT or Mill Finish	Chemical conversion coatings / passivation			Stamping oils	Protection oils	Hot melt dry lubricants
			Rectangular	Trapezoidal & curve cuts optimized to minimize scrap		Chemetall Gardobond®	Chemetall Oxsilan	Others on request			
Neuf-Brisach*	1920mm	0.7–2.5mm	✓	✓	✓	✓	✓	✓	✓	✓	
Singen*	1580mm	0.8–3.2mm			✓	✓			✓	✓	

*Other widths and thicknesses options upon request

Discover our aluminium applications in a real-time 3D model: www.automotive.products.constellium.com

This publication is not a contractual document and in no way incurs the liability of Constellium for the information contained herein.

Innovation: the cornerstone of tomorrow's Aluminium Automotive Body Sheet

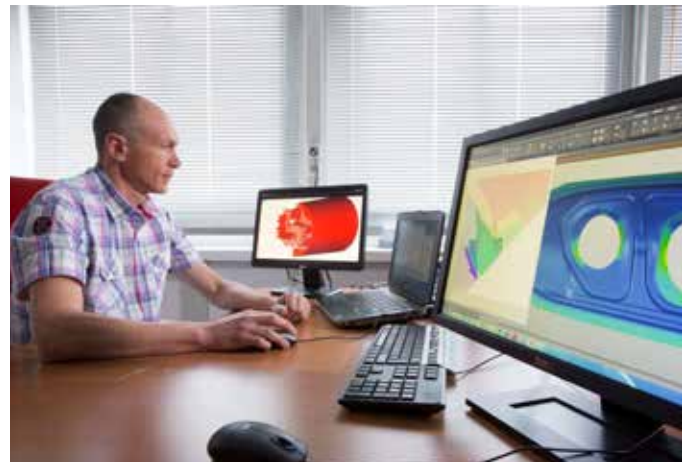
Innovation is essential for the development of advanced aluminium automotive body sheet solutions. At Constellium, the needs of original equipment manufacturers are at the forefront of our R&D processes.

Co-creation with customers for tailor-made solutions

We work hand-in-hand with our customers throughout the critical design phases to optimize the use of aluminium, ensuring the right material is used in the right place. Together, we develop customized solutions that fit their specific needs. We also explore technologies for the future that will improve weldability, processability, recycling and more.

A world-class R&D center at the service of future needs

At our world-class R&D center in France and at our plants around the world, we are pushing aluminium to new frontiers with the development of advanced, lightweight products. The center has expert teams of researchers, metallurgists and automotive specialists who are on hand to provide modeling and simulation capabilities, qualification processes and analysis.



Prototyping & testing

Alloy development

- Laboratory casting at all scales
- Hot and cold rolling
- Heat treatment and quenching

Surface treatment and lubrication

- From beaker-scale to continuous pilot line

Analysis and characterization

- Full range of corrosion and durability tests
- State-of-the-art electron microscopy and surface characterization
- Strong chemical analysis capability

Design, forming & simulation

- Design and forming feasibility simulation
- Support for alloy selection
- CAD (Catia)
- FEM modeling (LS-DYNA®, AutoForm®)

Formability and mechanical testing

- Full scale hydraulic stamping press
- State-of-the-art mechanical and formability laboratories

Joining and welding

- Adhesive bonding and durability testing
- Riveting, Resistance Spot Welding
- All relevant welding technologies

Working on tomorrow's portfolio



© G. Uféras

Alloys: a key area of development

Our solutions for OEM customers are helping make the transition to aluminium easier, more affordable and more eco-friendly.

Lightweighting is the key focus of our innovation. Through downgauging, aluminium creates gains in eco-efficiency, thus helping reduce the environmental footprint of cars over the usage phase.

With ultra high strength and formability, greater crash properties, higher stiffness and laser remote weldability, our products present a viable and much lighter substitute for steel in even the most demanding parts.

Pushing the limits of aluminium

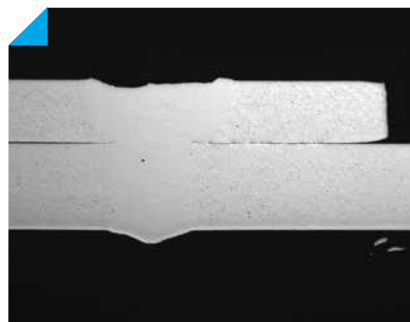
- Ultra high strength
- Ultra high formability
- Perfect crashability
- Higher stiffness



Metallurgy, corrosion and surface treatment expertise

Providing solutions

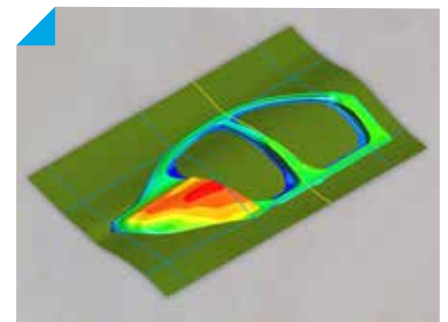
- For better integration with other materials
- For better manufacturing efficiency of OEMs



Mechanical and thermal joining studies

Customizing our offer

- From simulation studies in design phase to specific alloy & conversion developments



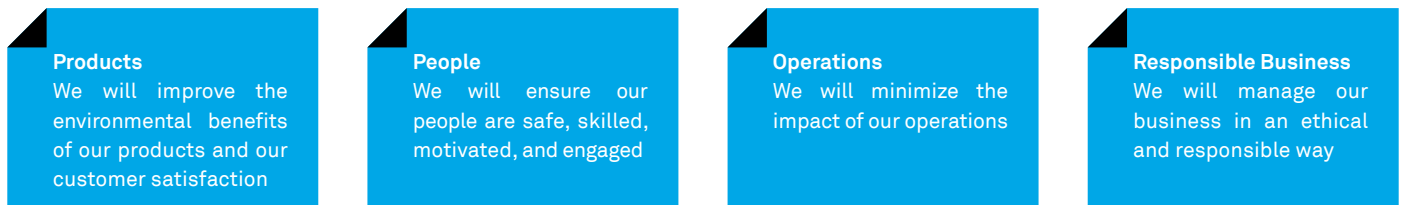
Design, CAD, forming and crash simulation, prototyping, characterization

Embrace Sustainability

Aluminium's inherent properties including recyclability positions it at the heart of the sustainability trends such as e-mobility and circular economy.

Holistic approach: 4 pillars

At Constellium, we take a holistic approach toward sustainability to minimize impacts and enhance benefits. It is based on **commitments** to improve our own operations, **transparency** in communicating our progress, and **partnerships** to address impacts throughout the entire value chain.



Eco-innovation for automotive

Aluminium's favorable strength-to-weight ratio over steel allows automakers to lightweight vehicles, leading to increased fuel efficiency, reduced CO₂ emissions, and extended electric vehicle range. Compared to a traditional steel car hood, an aluminium one produced by Constellium brings 40%* mass saving and emits 37%* less Green

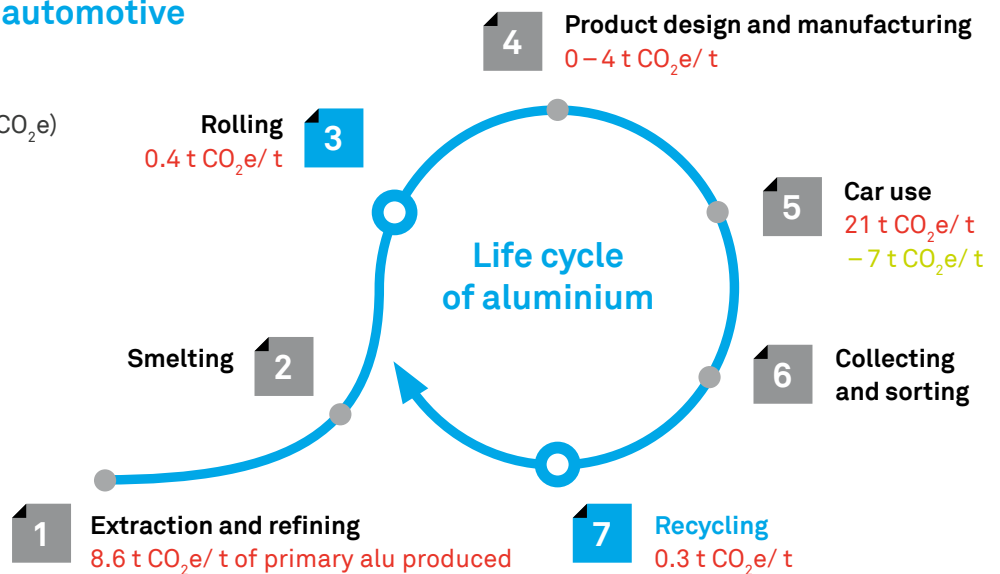
House Gas. The efficient recycling of aluminium products also helps to recover a significant part of the initial investment. Aluminium has also greater energy absorption leading to improved safety performance, and its thermal conductivity is an advantage for battery enclosures.

*Source: 3rd party LCA assessment
 (<https://www.constellium.com/sustainability/life-cycle-assessments>)

Life cycle assessment of automotive body sheet

Greenhouse Gas Footprint
 Tons Carbon Dioxide Equivalent (t CO₂e)

37%
 reduction in GHG emissions thanks to significant mass saving



Recycling metal has much lower GHG emissions than producing primary metal

Aluminium Recycling is the right thing to do

Recycling is the RIGHT THING to do and makes ECONOMIC SENSE. Constellium is committed to recycling the scrap produced during all production stages in all of our cast houses. We work closely with our clients and non-profit partners for a more efficient recycle closed loop, collecting and recycling aluminium scrap from both our customers' operations and products end-of-life.

Aluminium can be end-lessly melted down and recast while keeping its inherent properties



Recycling saves 95% energy compared to using primary metals

Sustainable supply chain

Constellium aims to work only with suppliers who comply with applicable laws and commit to sustainable practices. We do our utmost to integrate them into our Responsible Supply Chain Management Policy and Supplier Code of Conduct (CoC). We work to have our suppliers' sign-off of our Supplier CoC and continue to evaluate our key suppliers' sustainability performance. Meanwhile, we actively look for ASI certified aluminium supply.

Partnerships: sharing sustainability goals



Constellium is proud to be a member and work with various industrial bodies especially of the aluminium sector such as **Aluminium Association** in the US. Our targets align with **European Aluminium's Sustainability Roadmap** towards 2025.



Aluminium Stewardship Initiative (ASI) is a global, multi-stakeholder, non-profit standards setting and certification organization. Constellium is a founding member of what is now an organization counting more than 50 members. The ASI Standard includes principles, criteria, indicators and verifiers addressing environmental, social and governance issues with a certification scheme. As a member, we are committed to obtain certification of at least one entity or site by the end of 2019.

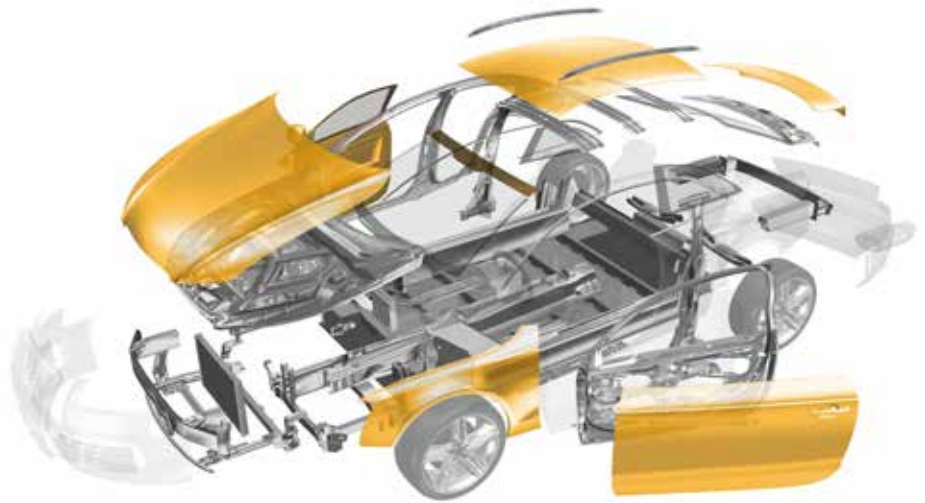
Our commitment to transparency



Surfalex[®] family

Automotive Body Sheet

High-tech outer alloys,
with exceptional surface
quality, hemming and
corrosion resistance



Surfalex[®] family

Alloy	Yield in service (MPa)	Hemming	Surface quality
Surfalex [®]	215	++	+++
Surfalex [®] HS	235	+++	+++

Paint bake condition = 2% +20min/185°C.

Chemical composition (weight %)

Alloy	AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
Surfalex [®]	6016A	<1.5	<0.5	<0.2	<0.2	0.2–0.6	<0.1	<0.2	<0.15
Surfalex [®] HS	6005A	0.5–0.9	<0.35	<0.3	<0.5	0.4–0.7	<0.03	<0.2	<0.1

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As delivered: typical values in transverse direction after 1 week of natural aging.

Alloy	Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
Surfalex [®]	95	205	0.45	23	26	0.32	0.64
Surfalex [®] HS	110	220	0.5	22	25	0.3	0.68

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain.

Typical yield strength values are given below

Alloy	Paint bake condition	Rp0.2 (MPa)
Surfalex [®]	2% +20min/170°C	185
	2% +20min/185°C	215
Surfalex [®] HS	2% +20min/170°C	205
	2% +20min/185°C	235

AutoForm and LS-DYNA[®] material cards available on request.

Delivery capabilities

Width: max. 2000 mm as standard, for larger widths please contact us

Thickness: 0.7 – 1.5 mm

Surface: EDT or Mill Finish

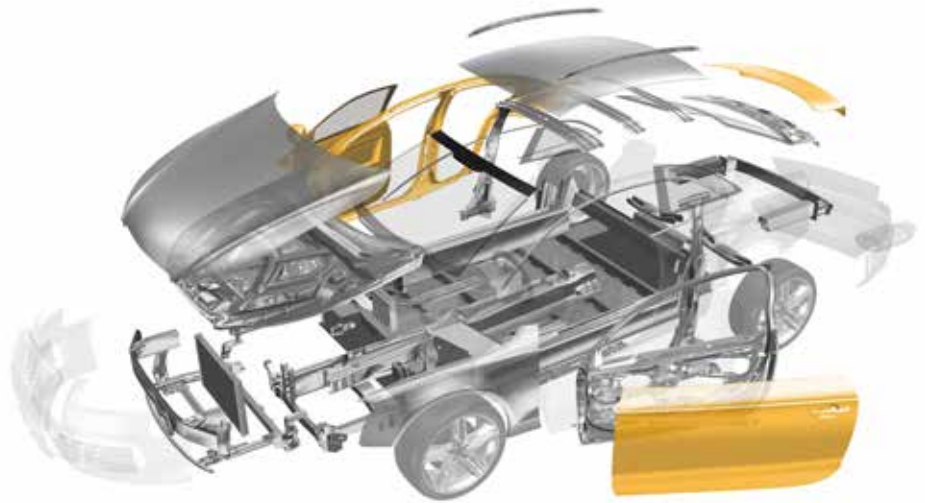
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

Surfalex[®] HF

Automotive Body Sheet

High-tech outer alloy, proposing excellent surface quality as Surfalex[®], combined with optimized formability for the most demanding outer parts



Chemical composition (weight %)

Alloy	AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
Surfalex [®] HF	6016	<1.5	<0.5	<0.2	<0.2	0.2–0.6	<0.1	<0.2	<0.15

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As delivered: typical values after 1 week of natural ageing.

	Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	ns	r10
Surfalex [®] HF	96	211	0.46	25	28	0.31	0.58

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain.

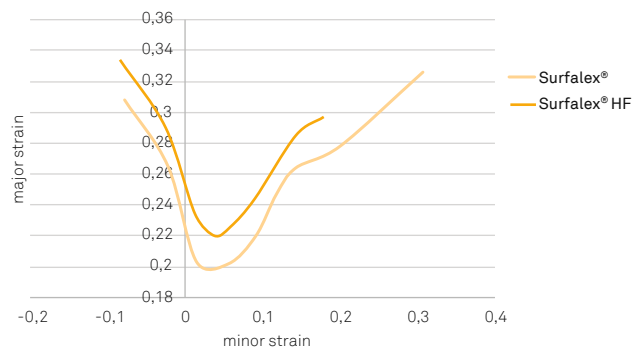
Example yield strength values are given below:

Paint bake condition	Rp0.2 (MPa)	A80 (%)
2% +20min/185°C	201	22

AutoForm and LS-DYNA[®] material cards available on request.

Alloy performance

Forming limit curve is improved, particularly in plane strain, enabling the forming of very complex and deeper parts, tighter radii and sharp character lines.



Delivery capabilities

Width: max. 2000 mm as standard, for larger widths please contact us

Thickness: 0.7 – 1.5 mm

Surface: EDT or Mill Finish

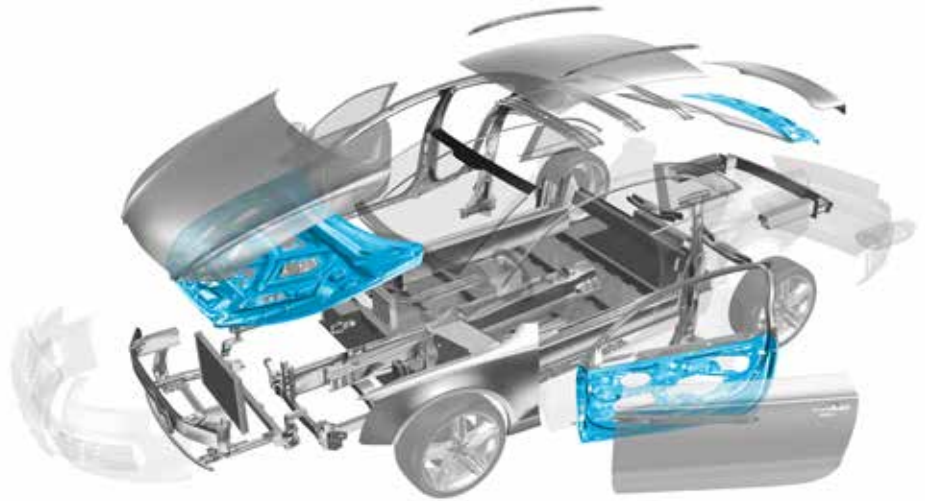
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

5xxx inner family

Automotive Body Sheet

Inner grades for car body construction



5xxx family

Alloy	Description
5754	Reference
5182	Improved strength
5182SSF	Improved strength & surface aspect

Chemical composition (weight %)

Alloy	AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
5754	-	<0.4	<0.4	<0.1	0.5	2.6–3.6	<0.3	<0.22	<0.15
5182 & 5182SSF	-	<0.2	<0.35	<0.15	0.2–0.5	4–4.5	<0.1	<0.22	<0.1

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction after 1 week of natural ageing.

Alloy	Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
5754	100	210	0.48	21	23	0.32	0.9
5182	145	280	0.52	23	26	0.32	0.67
5182SSF	130	275	0.47	21	25	0.31	0.65

AutoForm and LS-DYNA® material cards available on request.

Delivery capabilities

Width: max. 1850 mm as standard, for larger widths please contact us

Thickness: 0.7 – 3.5 mm

Surface: EDT or Mill Finish

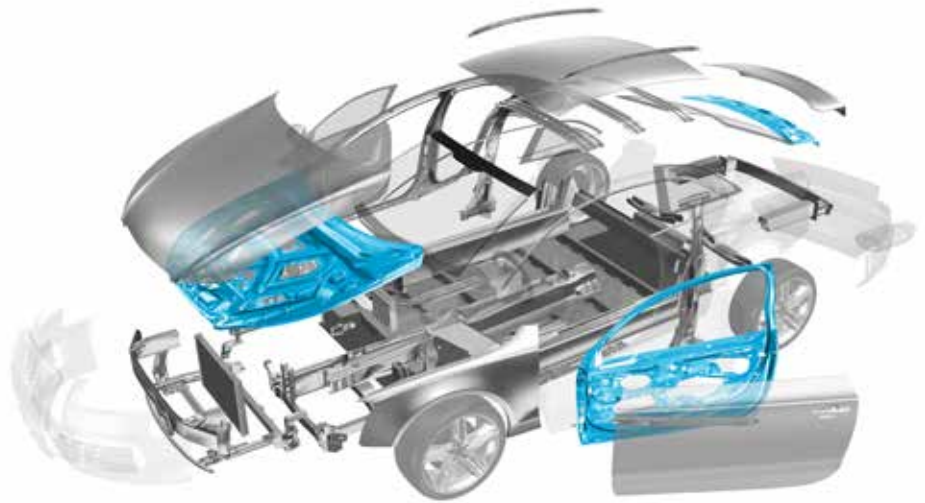
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

6xxx inner family

Automotive Body Sheet

Inner alloys with bake hardening effect



6xxx family

Alloy	Description
6016X	Reference
6016DRX	Improved strength

Chemical composition (weight %)

Alloy	AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6016X	6016A	<1.5	<0.5	<0.2	<0.2	0.2–0.6	<0.1	<0.2	<0.15
6016DRX	6016A	1–1.5	<0.5	<0.2	<0.2	0.2–0.6	<0.1	<0.2	<0.15

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction after 1 week of natural ageing.

Alloy	Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
6016X	92	195	0.47	21	25	0.3	0.86
6016DRX	105	225	0.47	24	26	0.3	0.91

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain. Typical values are given after 2% +20min/185°C:

Alloy	Rp0.2 (MPa)	Rm (MPa)	r10
6016X	215	275	16.5
6016DRX	240	300	18

AutoForm and LS-DYNA® material cards available on request.

Delivery capabilities

Width: max. 2000 mm as standard, for larger widths please contact us

Thickness: 0.7 – 3.2 mm

Surface: EDT or Mill Finish

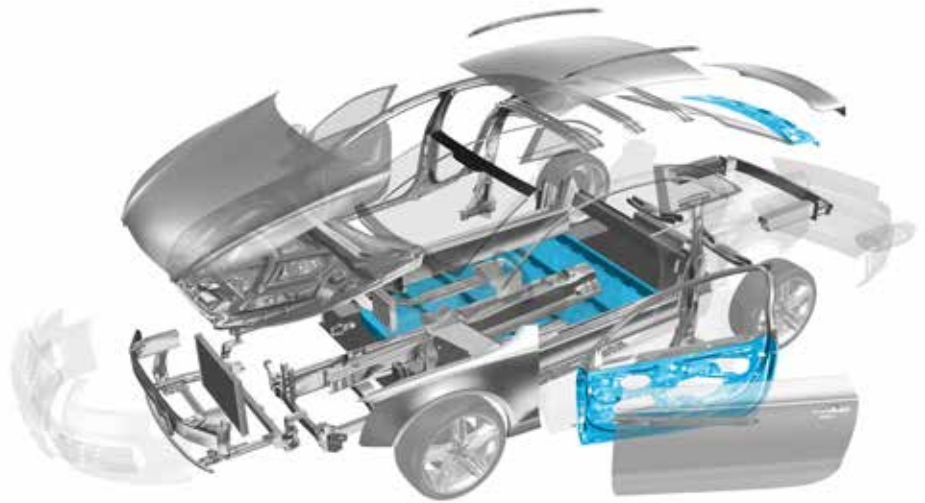
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

Formalex® Plus

Automotive Body Sheet

Inner alloy for car body construction with breakthrough formability behavior



Chemical composition (weight %)

AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
3003	<0.6	<0.7	<0.2	1.0 – 1.5	≤0.05	≤0.05	<0.1	≤0.05

Mechanical properties

As-delivered: values are given below (Transverse Direction):

Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
50	105	0.48	26	37	0.23	0.6

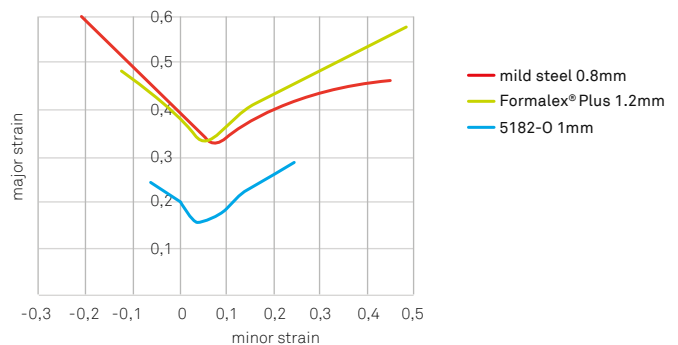
Example typical properties after 2% pre-straining are given below:

Pre-straining	Rp0.2 (MPa)	Rm (MPa)
2%	78	112

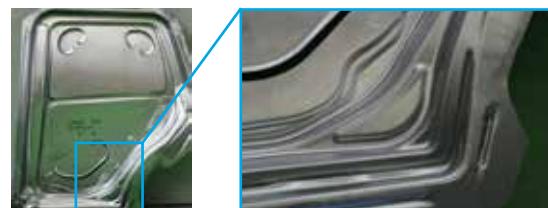
AutoForm and LS-DYNA® material cards available on request.

Formability

Typical Forming Limit Diagram of Formalex® Plus is comparable with mild steel.



Example of complex door inner stamped in Formalex® Plus



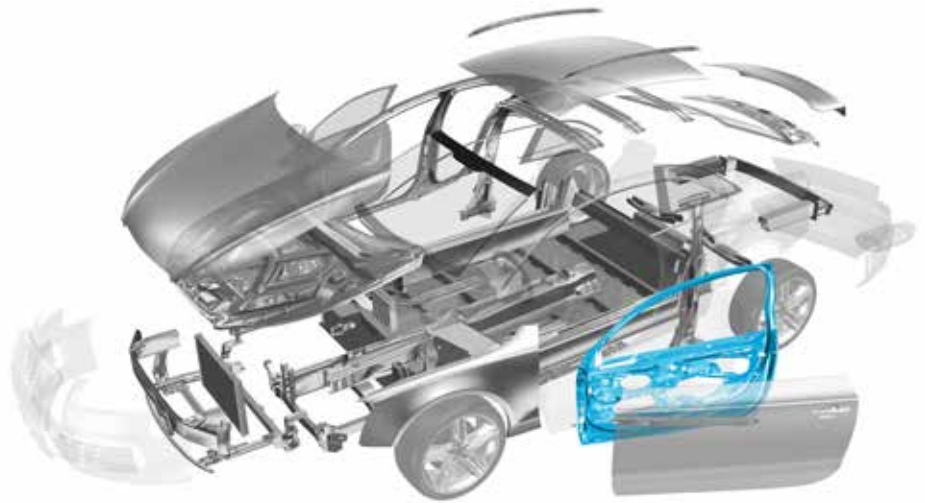
Delivery capabilities

- Width:** max. 1850 mm as standard, for larger widths please contact us
- Thickness:** 0.7 – 1.5 mm
- Surface:** EDT or Mill Finish
- Lubrication:** stamping oils, protection oils or hot-melt dry lubricants
- Cut to length:** rectangular, trapezoidal and curves cuts optimized to minimize scrap

Formalex[®] Remote

Automotive Body Sheet

Inner alloy providing an excellent weldability, in particular for Laser remote welding, and compatible with 6xxx recycling



Chemical composition (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
<5	<0.2	<0.2	<0.2	0.2–0.6	<0.1	<0.2	<0.15

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction after 1 week of natural ageing. Product performance is guaranteed up to 6 months after quench.

Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
107	222	0.48	20	24	0.28	0.6

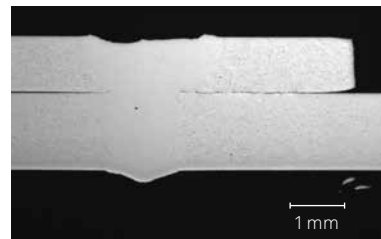
In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain. Example yield strength values are given below:

Paint bake condition	Rp0.2 (MPa)	A80 (%)
2% +20min/185°C	210	17

AutoForm and LS-DYNA[®] material cards available on request.

Welding performance

Formalex[®] Remote provides excellent weldability in Remote Laser Welding (high speed Laser welding without filler wire).



Crack free overlap joint made out Formalex[®] Remote laser welded at high speed without filler wire.

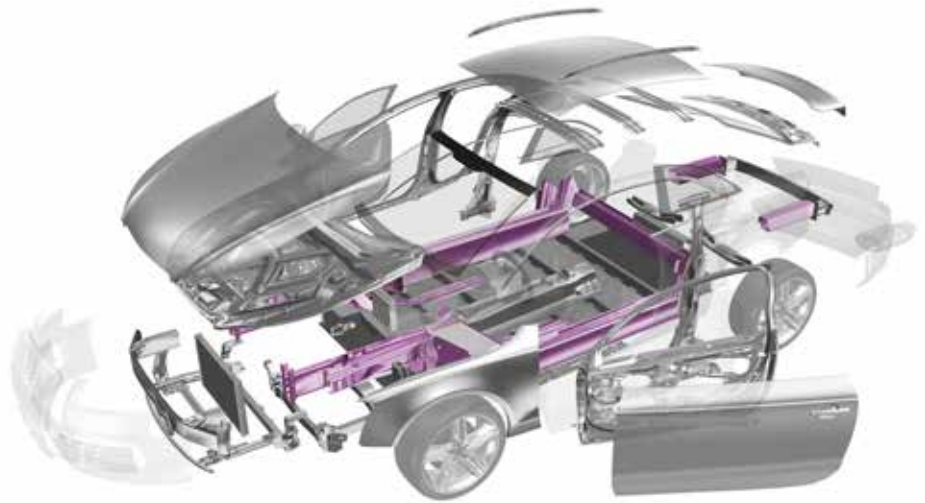
Delivery capabilities

- Width:** max. 1850 mm as standard, for larger widths please contact us
- Thickness:** 0.7 – 3.2 mm
- Surface:** EDT or Mill Finish
- Lubrication:** stamping oils, protection oils or hot-melt dry lubricants
- Cut to length:** rectangular, trapezoidal and curves cuts optimized to minimize scrap

Securalex[®] family

Automotive Body Sheet

Structural alloys with in-service performances optimized to propose an adapted strength combined with an excellent crash performance



Securalex[®] family

Alloy	Description
Securalex [®]	Medium strength crushable alloy
Securalex [®] HS	High strength crushable alloy
Securalex [®] UHS	Ultra high strength crushable alloy

Chemical composition (weight %)

Alloy	AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
Securalex [®]	6005A	0.4–0.65	<0.35	<0.2	<0.2	0.45–0.6	<0.1	<0.2	<0.05
Securalex [®] HS	6005A	0.5–0.9	<0.35	<0.3	<0.5	0.4–0.7	<0.3	<0.2	<0.01
Securalex [®] UHS	6111	0.6–0.8	<0.35	0.6–0.8	<0.3	0.5–0.7	<0.03	<0.1	<0.15

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction at 1 week.

Alloy	Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
Securalex [®]	95	185	0.51	20	25	0.35	1.0
Securalex [®] HS	120	230	0.52	20	23	0.29	1.3
Securalex [®] UHS	140	280	0.5	21	26	0.28	1.2

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain.

Product	After paint bake (T64 temper = 2% +20min 185°C)			
	Rp0.2 (MPa)	Rm (MPa)	A80	αnorm 2.0 mm*
Securalex [®]	190	245	21	140
Securalex [®] HS	240	290	21	120
Securalex [®] UHS	270	330	20	100

*Normalized external bending angle according to VDA 238-100, after 10% pre-strain in transverse direction and 20 min 185°C

AutoForm and LS-DYNA[®] material cards available on request.

Delivery capabilities

Width: max. 2000 mm as standard, for larger widths please contact us

Thickness: 0.7 – 3.2 mm

Surface: EDT or Mill Finish

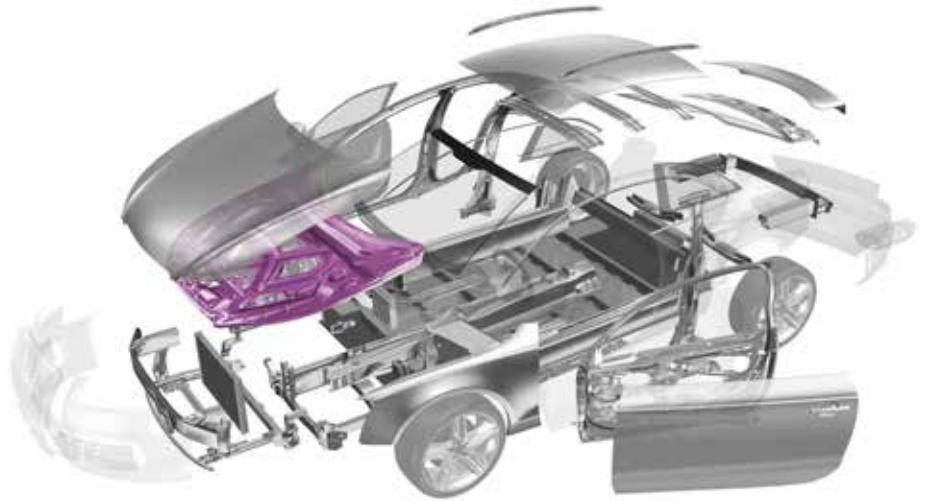
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

Securalex® P5

Automotive Body Sheet

Inner alloy optimized for hood inners, especially for pedestrian safety requirements



Chemical composition (weight %)

AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
5251	<0.3	<0.3	<0.1	<0.5	<2.5	<0.1	<0.15	<0.1

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As delivered: typical values

Rp0.2 (MPa)	Rm (MPa)	Rpo.2/ Rm	Ag (%)	A80 (%)	n5	r10
81	185	0.43	18	20	0.31	0.61

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain.

Typical values are given after 5% +20min/185°C:

Rp0.2 (MPa)	Rm (MPa)	A80 (%)
120	190	17

AutoForm and LS-DYNA® material cards available on request.

Alloy performance

For hood inners, Securalex® P5 offers unique compromise between stiffness and controlled strength. This is particularly useful to manage pedestrian safety, in particular head impact.



Delivery capabilities

Width: max. 1850 mm as standard, for larger widths please contact us

Thickness: 0.7 – 3.2 mm

Surface: EDT or Mill Finish

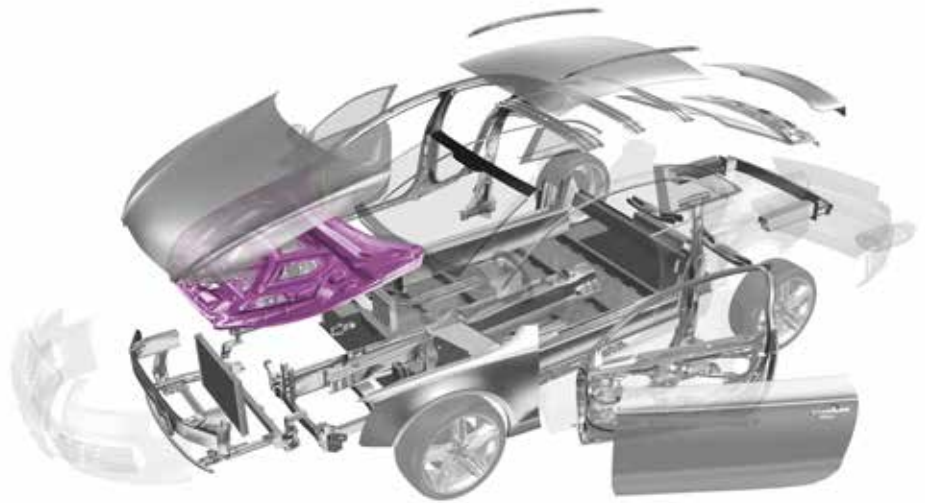
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

Securalex® P6

Automotive Body Sheet

Inner alloy optimized for hood inners, especially for pedestrian safety requirements



Chemical composition (weight %)

AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6560	0.4–0.65	<0.35	<0.2	<0.2	0.2–0.35	<0.05	<0.15	<0.1

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction after 1 week of natural ageing. Product performance is guaranteed up to 6 months after quench.

Rp0.2 (MPa)	Rm (MPa)	Rp0.2/Rm	Ag (%)	A80 (%)	n5	r10
70	160	0.44	21	26	0.3	1.1

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain.

Typical values are given after 2% +20min/185°C:

Rp0.2 (MPa)	Rm (MPa)	A80 (%)
130	190	18

AutoForm and LS-DYNA® material cards available on request.

Alloy performance

For hood inners, Securalex® P6 offers unique compromise between stiffness and controlled strength. This is particularly useful to manage pedestrian safety, in particular head impact.



Delivery capabilities

Width: max. 2000 mm as standard, for larger widths please contact us

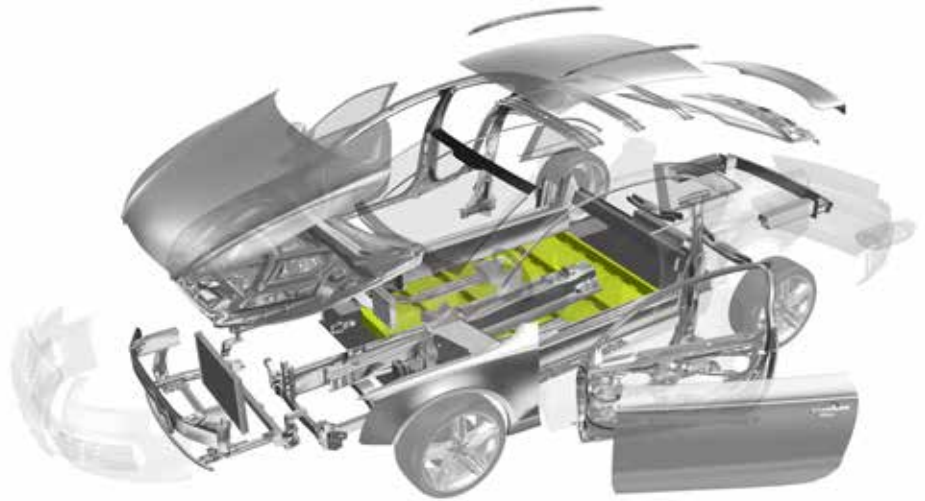
Thickness: 0.7 – 3.2 mm

Surface: EDT or Mill Finish

Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

Inner alloy for chassis and car body construction with excellent corrosion behavior



Chemical composition (weight %)

AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
5018B	<0.25	<0.4	<0.1	0.4–0.7	2.9–3.6	<0.3	<0.2	<0.2

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction for 1.5 mm.

R _{p0.2} (MPa)	R _m (MPa)	R _{p0.2} /R _m	Ag (%)	A80 (%)	n ₅	r ₁₀
130	245	0.53	19	22	0.32	0.65

AutoForm and LS-DYNA[®] material cards available on request.

Corrosion resistance

Intergranular corrosion results according to ASTM G 67.

Condition	Mass Loss (mg/cm ²)
O/H111	<1.5
17h 130°C	<4

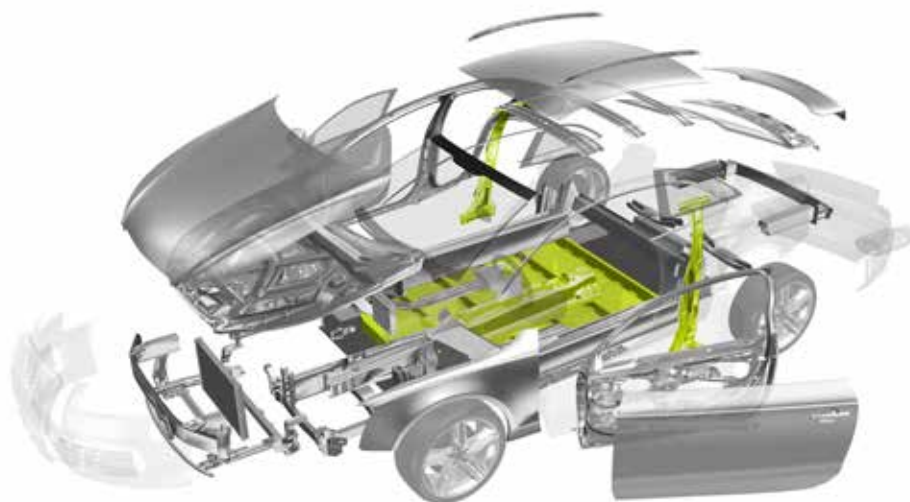
Delivery capabilities

- Width:** max. 1850 mm as standard, for larger widths please contact us
- Thickness:** 0.7 – 3.5 mm
- Surface:** EDT or Mill Finish
- Lubrication:** stamping oils, protection oils or hot-melt dry lubricants
- Cut to length:** rectangular, trapezoidal and curves cuts optimized to minimize scrap

Strongalex®

Automotive Body Sheet

Structural alloy for car bodies with improved strength in service



Chemical composition (weight %)

AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
6016	<1.5	<0.5	<0.2	<0.3	<0.9	<0.15	<0.25	<0.15

Other elements: <0.05 each, <0.15 in total, remainder aluminium

Mechanical properties

As-delivered: typical values in transverse direction after 1 week of natural ageing.

R _{p0.2} (MPa)	R _m (MPa)	R _{p0.2} / R _m	Ag (%)	A80 (%)	n ₅	r ₁₀
130	240	0.54	22	24	0.26	0.8

In service: properties on finished parts depend on paint bake time and temperature, as well as stamping strain.

Typical values are given after 2% +20min/185°C:

R _{p0.2} (MPa)	R _m (MPa)	A80 (%)
270	320	17

AutoForm and LS-DYNA® material cards available on request.

Delivery capabilities

Width: max. 2000 mm as standard, for larger widths please contact us

Thickness: 0.7 – 3.2 mm

Surface: EDT or Mill Finish

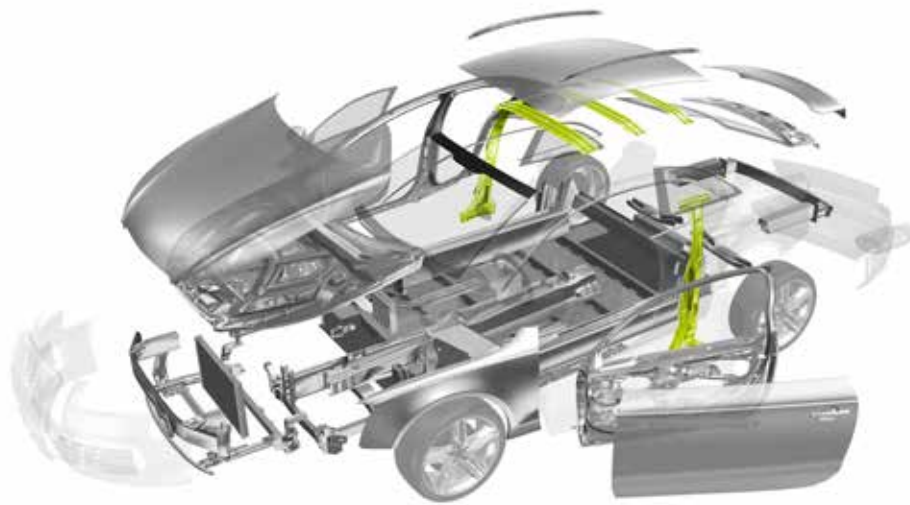
Lubrication: stamping oils, protection oils or hot-melt dry lubricants

Cut to length: rectangular, trapezoidal and curves cuts optimized to minimize scrap

Ultralex[®]

Automotive Body Sheet

Structural alloy with ultra high strength, adapted for anti-intrusion applications



Chemical composition (weight %)

AA	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti
7075	<0.4	<0.5	1.2–2.0	<0.3	2.1–2.9	0.18–0.23	5.1–6.1	<0.2

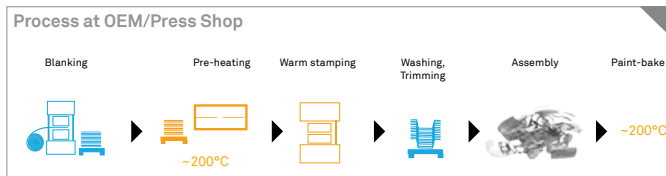
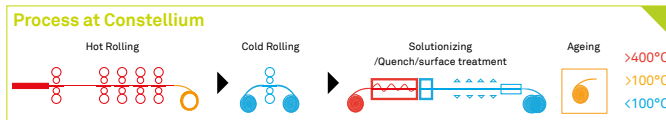
Mechanical properties

As delivered: typical values in transverse direction

Rp0.2 (MPa)	Rm (MPa)	Rpo.2/ Rm	Ag (%)	A80 (%)	n5	r10
520	595	0.87	11	13	0.08	0.95

Ultralex[®] T6 is delivered in aged temper compatible with warm forming process with limited loss of strength during the forming operation.

Other tempers (e.g. F, T61, ...) and other forming processes (e.g. hot forming, cold roll forming, ...) are possible.



In service: Typical values after warm forming at T°C and paint-bake simulation (BH) of 20 min 185°C.

In-service properties	Rp0.2 (MPa)	A80 (%)
T6 + T(175)°C + BH	500	12
T6 + T(225)°C + BH	515	12

LS-DYNA[®] material cards available on request.

Delivery capabilities

Dimensions upon request.