

No Compromise with **Safety!**

## **Securalex®**

# high-tech crash alloys for enhanced energy absorption

Optimized in terms of composition and processing conditions, Constellium's Securalex® product range achieves good formability and excellent energy absorption in case of collision, with no brittle fracturing.

Energy absorption - Ductility - Thermal stability

Constellium's Securalex® product range is a family of high-tech crash alloys. The product range comprises:

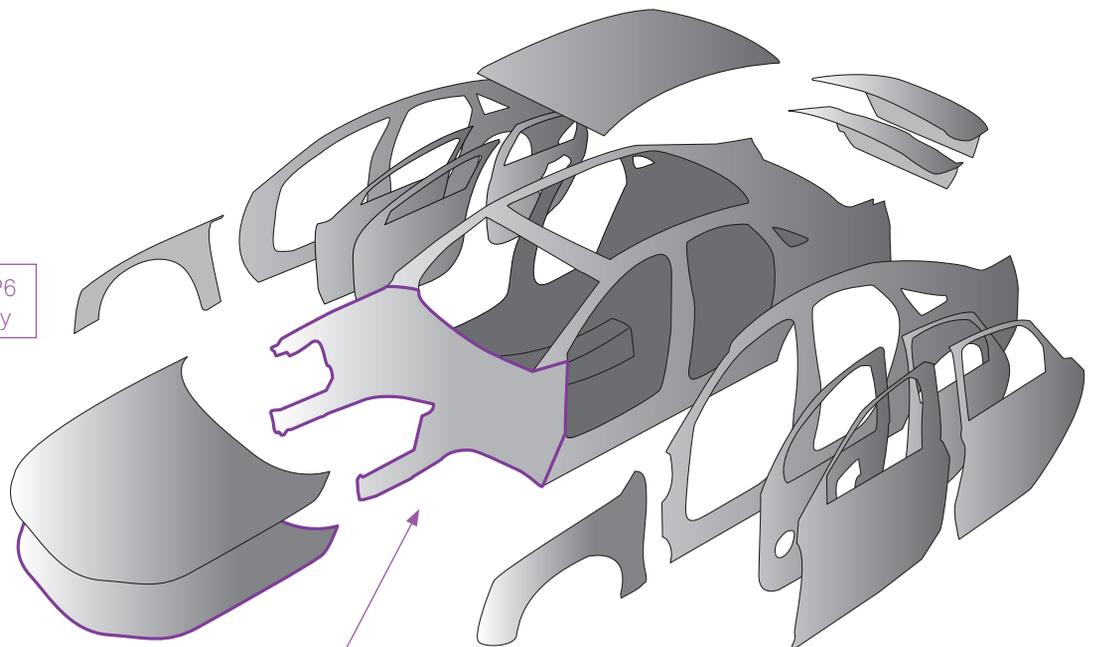
► **SECURALEX®**

A crash-crushable alloy for structural inner parts with excellent crash performance

► **SECURALEX® P5/P6**

Ductile lower strength alloys for greater pedestrian safety

Securalex® P5/P6  
pedestrian safety



Securalex®

Aluminium Automotive Sheets

# Trend towards best-in-class alloys, at both strength and ductility levels

Securalex® is a 6xxx series alloy optimized in composition and processing conditions to give **good formability** in T4 condition and **excellent energy absorption** in crash:

- ▶ Minimized content of coarse intermetallic particles
- ▶ Good quench to avoid grain boundary precipitates

Securalex® offers good folding behavior without cracks to guarantee integrity in case of crash.

Securalex® P5/P6 is designed for showing low strength and high formability for applications on hood inners to ensure good Head Injury Criterion (HIC) impacts values.

Our Securalex® is used in reinforcement of the doors of the major OEMs' car models.

Constellium's conversion treatments enhance bond durability of structures optimized for excellent crash performance.



Securalex® T6 (30'@205°C)



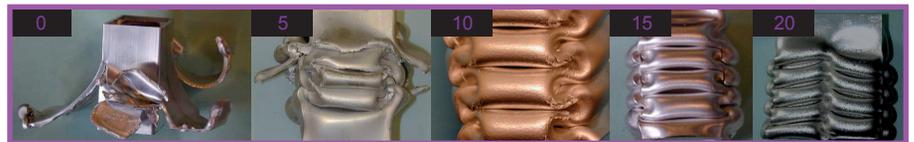
Standard 6016 T6 (30'@205°C)

## Crash alloys in Body-in-White (BiW) structures: undisputable tests results

The Securalex® product family demonstrated **significantly higher specific energy absorption** when analyzed after three specific crash tests:

### Dynamic impact testing

Crash test by crushing a tube of defined geometry in a high-speed impact machine (drop tower, sled or other).



0 No folds, complete fragmentation

5 Folds, but partial fragmentation

10 No fragmentation, local cracks >10mm

15 No fragmentation, local cracks <10mm

20 No fragmentation, no cracks

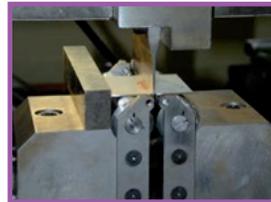
← NOT OK for axial crash

→ GOOD in axial crash



### Quasi-static compression

Slow crushing (quasi-static) shows good correlation with high-speed impact testing. Aluminium alloys generally have very low strain rate sensitivity.



### Three-point bending

The main deformation mode during crash folding is bending. Automated three-point bending test is a quick, easy, reproducible and quantifiable method.

### Conversion capabilities

Constellium works with the surface condition, offering EDT of mill finish, and chemical conversion coatings. Our lubricants include stamping oils, protection oils and hot melt dry lubricants. For more details, please refer to the Global Offering datasheet.

## Securalex® family: Typical properties

*\*After 30 minutes' heating treatment at 205°C.*

As supplied (T4)					T6*			
TYS	UTS	A80%	n	r	TYS	UTS	VDA bend	Axial Crash
92	185	25	0,26	0,72	228	271	>110°	No Cracks

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