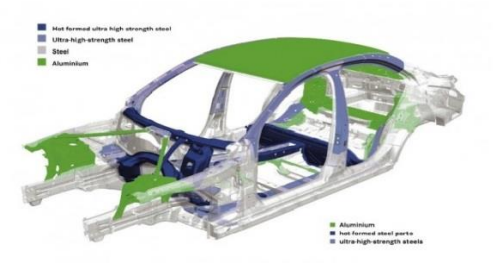
ANTICORROSION PROTECTION ZINC-O-FIX®

Although the Automotive's field is in continuous development in order to reach the creation of state-of-the-art means of transport, using light alloys and specials materials to obtain high-performance vehicles, the corrosion's problem still exists. This happens especially in the junctions elements, in the coupling between different metals, and specifically in the so-called "hot spot corrosion". Hot spot corrosion are concentrated along:

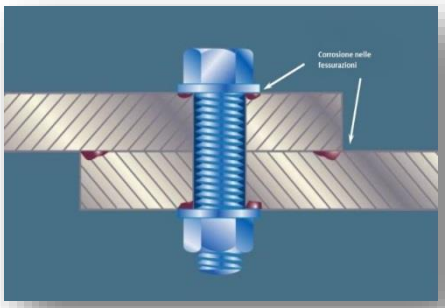
- Car door hinges;
- The channelling located around the bot and bonnet;
- Welded or bolted body connections;
- Holes for bolts, fasteners and rivets;
- Lower borders terminals on the body –work.



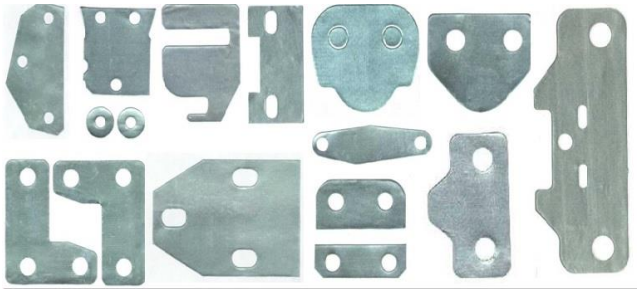
The most common corrosion problems are:

- **CREVICE CORROSION**
- **GALVANIC CORROSION**

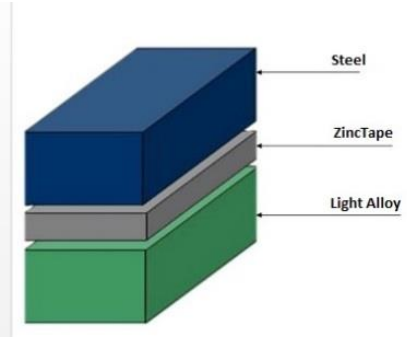
The **crevice corrosion** is due to a stagnation of substances, which originates corrosion (e.g. water, moisture). This phenomenon happens in correspondence to areas of coupling metals and especially between fastening elements (e.g. bolting of two elements), in presence of fissures or in areas where there is the presence of deposits.



This specific corrosion problem can be avoided with preventive actions using as a protection Zinc-o-fix® product. This product has been used for many years in the production of vehicles and means of public transport, and for their maintenance. In the specific case, and in all corrosion cases due to the coupling of metals with fastening elements, the problem is solved introducing between the elements a shape created according to the client's need.



The **galvanic corrosion**, on the other hand, is due to the coupling between two metals with different electrochemical potential.
In the construction of means of transport, light alloys and steel are coupled, and in presence of electrolyte (moisture, water, etc.) a galvanic cell is activated starting the corrosion process.



When these two materials get in both electrical and electrolytic contact, a galvanic process begins. The electrolytic contact arises when a solution (usually rain-water) seeps between the two surfaces. This contact can even be caused by signs of dampness between the two surfaces or by a chemical non- homogeneity of one of the two surfaces because of the presence of oxides, dirt, etc. Since the electrochemical potentials of steel and iron materials are more electropositive than light alloys, they can cause corrosion. This will not happen using Zinc-o-fix®, in fact it will stop any corrosion acting as a galvanic anode protecting both the surface of the light alloy and the steel.

Zinc-o-fix® is a zinc-tape of high pureness (>99, 95% of the chemical mass of zinc) obtained from a specific alloy of own technical know-how, with a nominal thickness from 0,080 to 0, 45 mm. This tape is supplied with an electro-conductive adhesive, which can resist continuous operating temperature from -40 to +120° C. The conductive adhesive is a vital part of the Metalnastri's zinc tape, because it allows also active protection against the corrosion (cathodic protection).

Covering the surface of the metal structure with Zinc-o-fix® it is achieved both:

- a **passive protection** due to the homogeneity and isotropy of the coating and to the adhesive, which sticks well avoiding any infiltration,
- an **active protection** because the difference of potential between the two surfaces decreases. The potential of zinc is very similar to that of the light alloy and so the zinc tape is the sacrificial anode instead of the light alloy.

Zinc-o-fix® is a technological, environmentally friendly and an excellent cost-effective product. Its minimum duration is about 20 years that can vary depending on the environment in which is situated, reaching even the duration of 30 years. Thanks to its durability, the maintenance costs are considerably reduced. The main cars manufacturers, such as Mercedes, Ferrari, Maserati, Renault, like so the main trains, undergrounds, trams and buses manufacturers, use the Zinc-o-fix® product as anticorrosive protection since various years. Excellent results were shown after inspections on the product's application 5 and 10 years on, where there were no traces of corrosion and a normal reduction of the zinc mass due to its sacrificial function.