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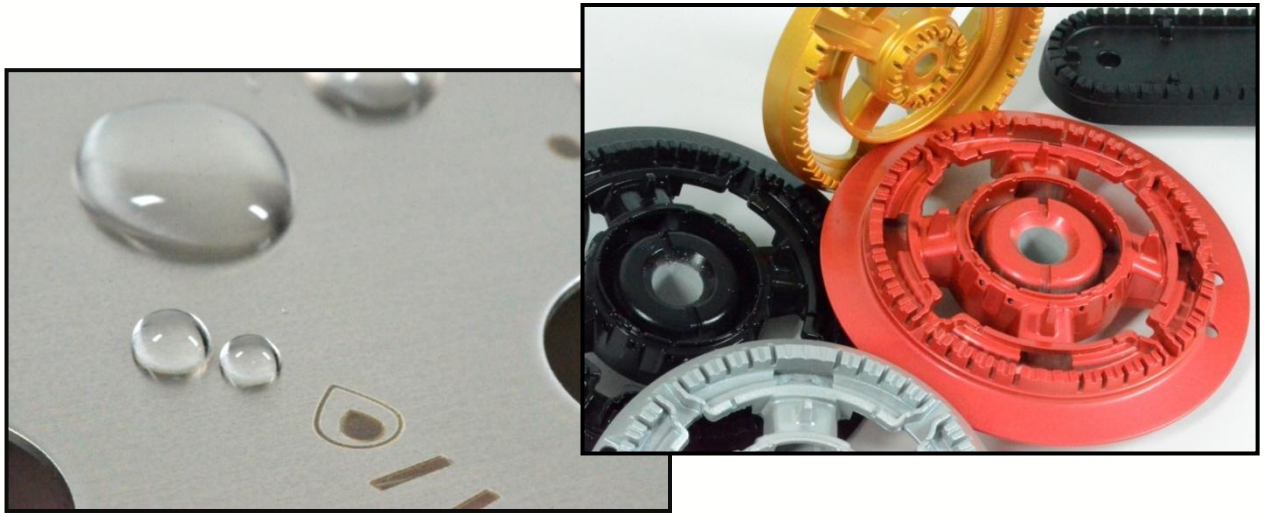
Nanostructured coatings



***SOL-GEL** technology **ceramic** based*

Transparent and coloured nanostructured coatings:

Surface improvement with nanotechnology

Transparent SOL-GEL

- ✓ *EasySOL*
- ✓ *SOL-TEK*
- ✓ *Antibacterial SOL-GEL*

Ceramic coatings

- ✓ *Th.Ec. SOL 2.0*
- ✓ *Th. Ec. SOL Fire*
- ✓ *Th. Ec. SOL 2.0 Plus*

Transparent SOL-GEL
"EasySOL"

Features:

- Formulation based on SOL-GEL nanotechnology.
- Thickness < 3 micron.
- **Hydrophobic** and **transparent** ceramic matrix composite film.
- Materials to be coated: steel, aluminium, glass.
- Coating methods:

  spray

  dip coating

Transparent SOL-GEL
"EasySOL"

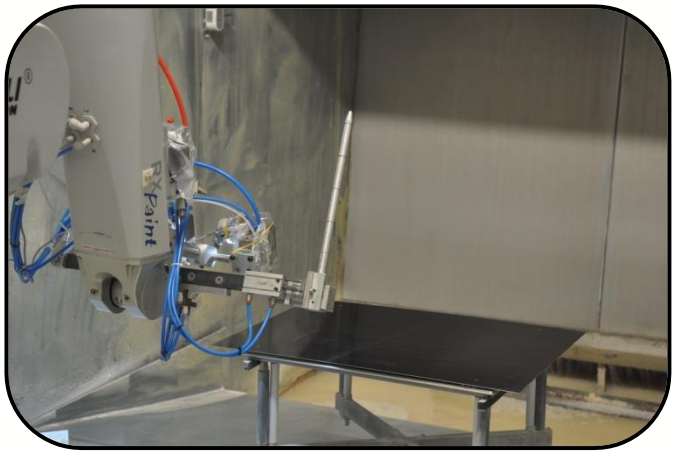
A method to obtain an hydrophobic surface

Ferritic stainless steel sample uncoated

Ferritic stainless steel sample coated with EasySOL

Easy to clean

Transparent SOL-GEL "SOL-TEK"



Features:

- Nanostructured coating.
- Film made of inorganic oxides, 1-2 micron thickness
- Materials to be coated: steel, aluminium, glass
- Application methods:

  spray

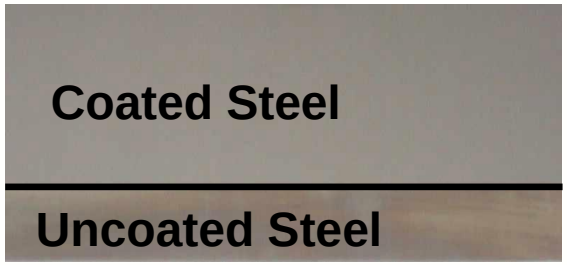
  dip coating

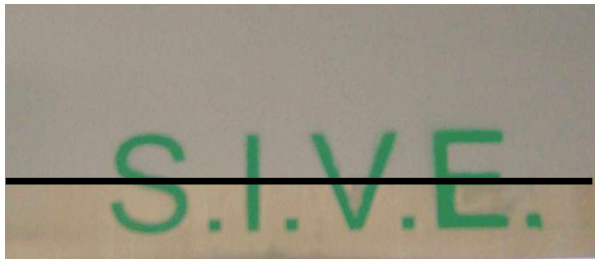
  spin coating

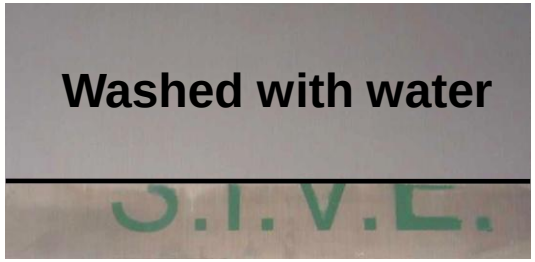
Transparent SOL-GEL

" SOL-TEK "

A method to obtain a hydrophilic surface:





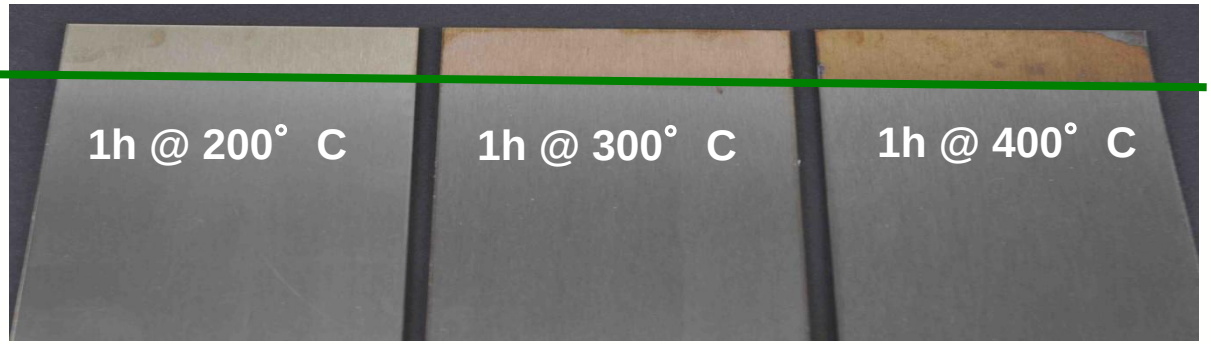


Easy to clean

Thermal resistance:

Uncoated Steel

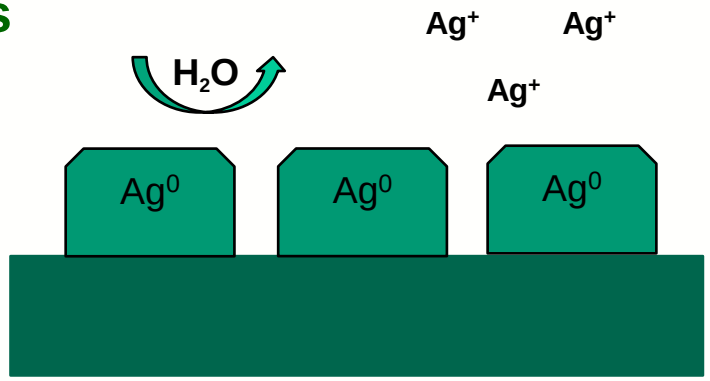
Coated Steel



Transparent SOL-GEL "Antibacterial SOL-GEL"

Features

The antibacterial behaviour is due to release of silver ions by the coated support. Silver ions damage the cell with metabolic processes of bacteria.



SAMPLE	INOCULUM	RECOVERY AFTER 24 HOURS	R%	Rlog
REFERENCE (Untreated stainless steel)	37×10^5	62.3×10^6		
Stainless steel with Antibacterial SOL-Gel coating (TEST 1)	37×10^5	64.7×10^4	**98.9**	**1.9**
Stainless steel with Antibacterial SOL-Gel coating (TEST 2)	37×10^5	89.6×10^4	**98.6**	**1.8**

The data reported show that the killing of the bacterial load is greater than 98%.

Transparent SOL-GEL
Performances

PROPERTIES	EasySOL	SOL-TEK
Thermal resistance	1h@400°C	1h@400°C – no colour variation
Wettability	Low	High
Solvent resistance	24h ethanol, aromated not clorinated, heptane	24h ethanol, aromated not clorinated, heptane
Salt spray chamber	ND	> 500h
Food compliance	compliant	compliant
Chemical resistance	24h in nitric acid 10%	24h in nitric acid 10%

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Transparent SOL-GEL Applications

Home appliances

Domotics

Urban and railway furniture

Tap and fittings

Nautical accessories

Optics (lenses and frames)

Automotive

Constructions and joinery

Electronics

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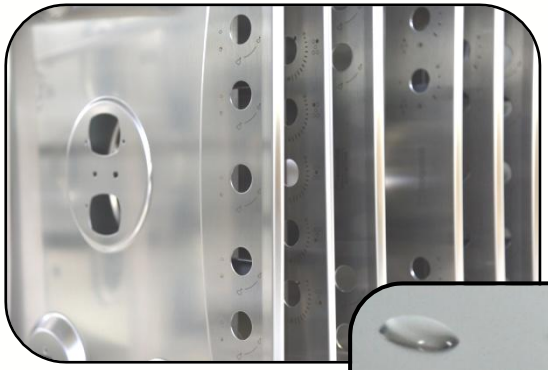


Ceramic coatings

" Th.Ec.SOL 2.0 "

" Th.Ec.SOL 2.0 Plus "

" Th.Ec.SOL Fire "

Nanostructured coatings PTFE free

Ceramic coatings
3 solutions provided

- ***"Th.Ec.SOL 2.0":*** non-stick coating at competitive costs. Applications on fryers, grills, thermoblock, industrial molds…

- ***"Th.Ec.SOL Fire":*** recommended on surfaces where it is necessary to have maximum resistance to heat and flame (burners, accessories for pyrolytic ovens…)

- ***"Th.Ec.SOL 2.0 Plus":*** non-stick coating with high aesthetic requirements (design, professional pans…)

Ceramic coatings

Features

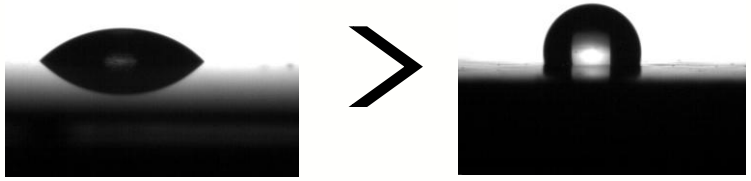
It is a ceramic non-stick coating.

Th.Ec. SOL 2.0
Th.Ec. SOL Fire

Th.Ec. SOL 2.0 Plus

Laboratory tests show a contact angle similar to that of PTFE based coat.

Uncoated Aluminium:
low contact angle.



Aluminium + Th.Ec.SOL:
high contact angle.

Ceramic coatings
Technology

- PTFE free: food is cooking on coating free from fluorinated substances.
- Hardness: withstands scratches and abrasions, resistant to high temperature.
- Excellent non-stick properties: allow easy removal of cooking residues, even if burned.
- Chemically inert: it does not alter in contact with food and hosehold cleaners
- Thermal conductivity: better heat transfer than traditional PTFE coatings
- Nanostructured: SOL-GEL technology allows maximum flexibility in the formulation and stabilization at low temperatures (200/250° C).

Ceramic coatings

Performances

PROPERTIES	Th.Ec.SOL 2.0	Th.Ec.SOL Fire	Th.Ec.SOL 2.0 Plus
Hardness	+	++	+
Thermal resistance	+	++	+
Antistick	++	+	+++
Chemical resistance (24h Ac.Acetic 98%)	+	+	+
Solvent resistance	+	+	+

Ceramic coatings

Applications

- ***Materials coated:***:
  - **metals**: aluminium alloys die castings, rolled steel or aluminium, copper, brass;
  - **plastics**: PA66, PEEK, PAA and other technical plastics;
  - **others**: glass, carbon fiber.

- ***Ecology:*** being made up principally of silica, Th.Ec.SOL is ecocompatible.

- ***Colours***: pastel, metal effect, metalized, semigloss or matt, on demand.

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Ceramic coatings

Applications









Surface preparation

Proper surface preparation is the basis for a good coating.

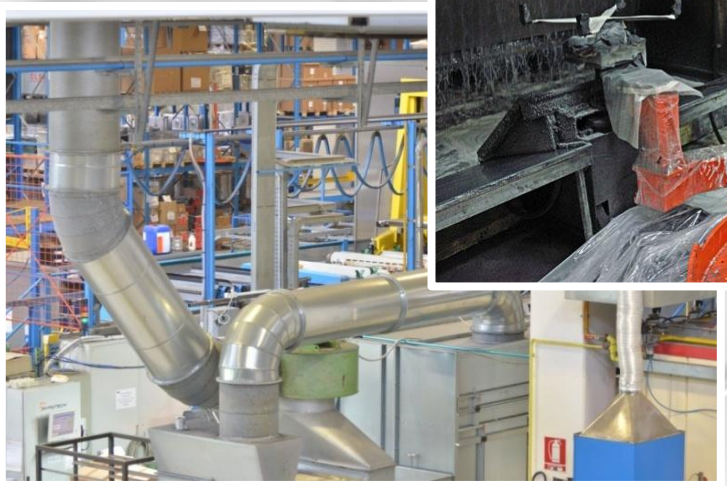
Chemical pickling of aluminium alloys allows to increase the surface area.

Passivation of stainless steel restores the inoxidabilityof the alloy.

Features

- **Ecological passivation in baths nitric acid free**
- **Degreasing baths containig up to 75 % of water.**
- **Availability to treat complex parts.**

Nanostructured coatings



Nanostructured coatings

Contacts

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