DURASURF

Fluorine-based coating

Product line up and overview

Producer:
HARVES Co., Ltd.

Distributor in Europe:
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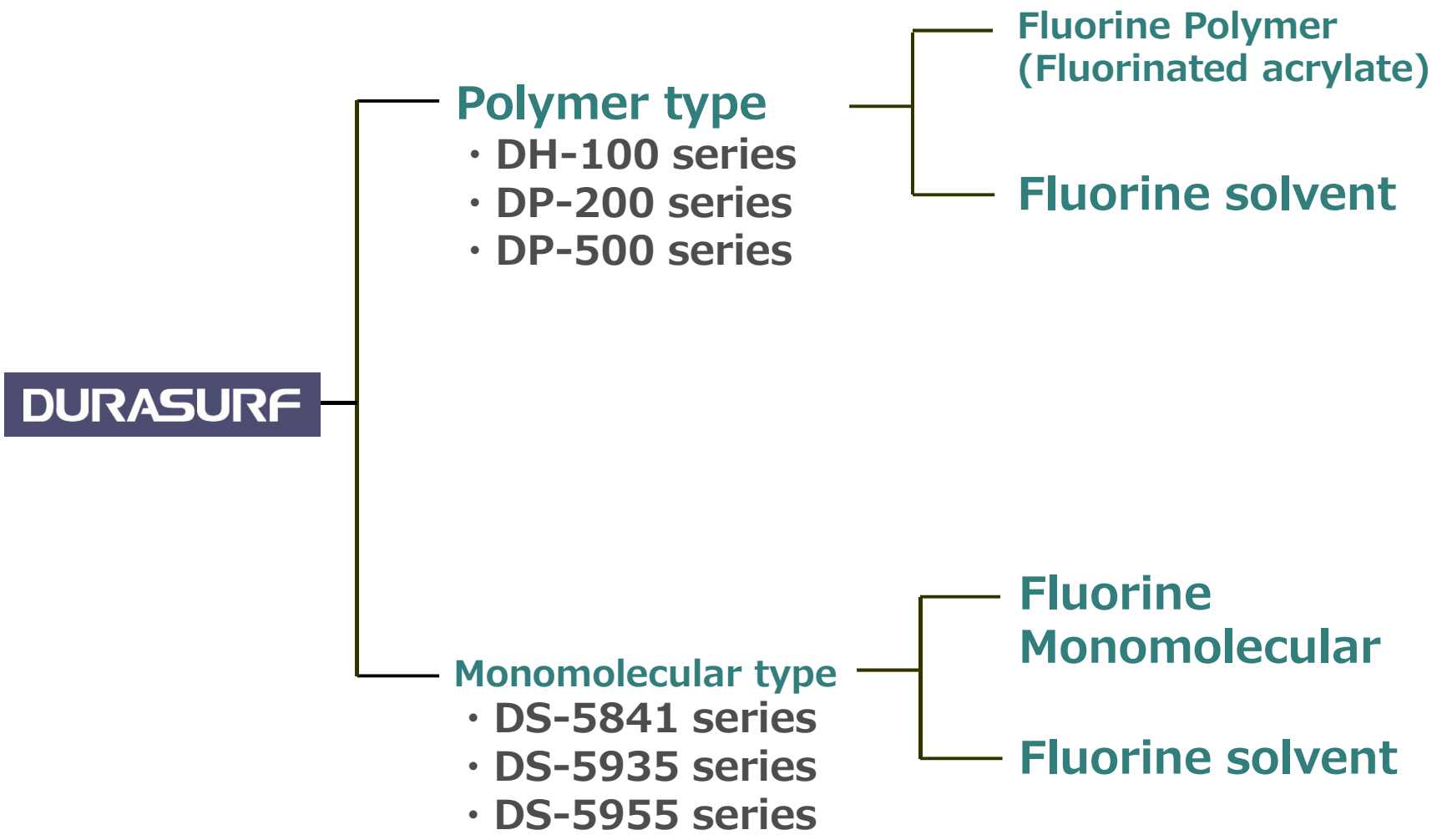
DURASURF Base Concept & Function

Base concept → **Quick Dry, Non Flammable solvent, Fluorine-based coating**

- Antifouling
- Fingerprint proof
- Moisture proof
- Anti-rust
- Water repellent
- Oil repellent

DURASURF Type and main component



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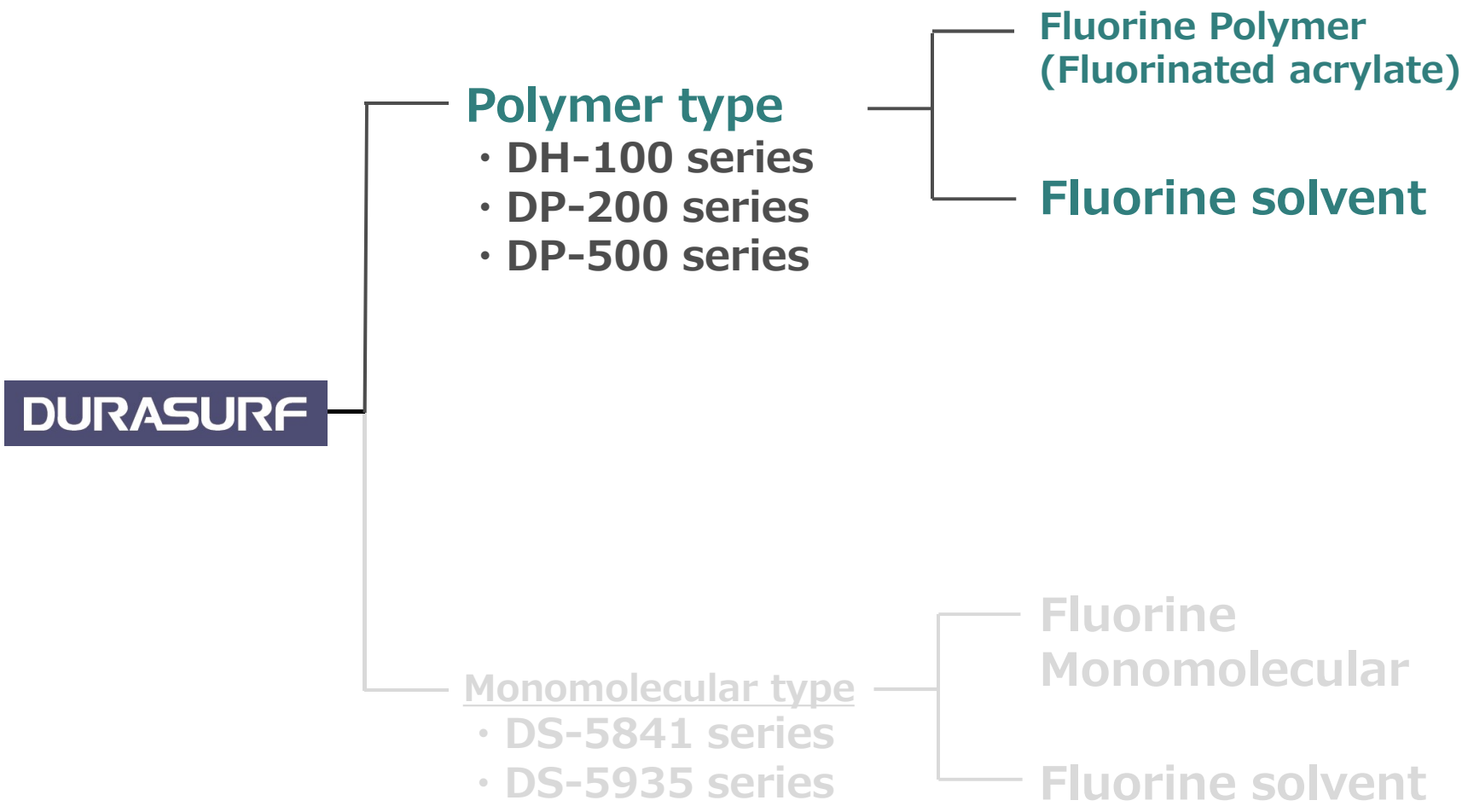
DURASURF Polymer type



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DURASURF Polymer type line up

Series	Application, Property
DH-100 series	Water repellent Oil repellent
DP-200 series	Prevent metal and metal plating from corrosion (Relatively hard coating film)
DP-500 series	Barrier to moisture, insulation (Pass heat cycle test thanks to soft coating film)

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DP-500 series

Application: Barrier to moisture, Electrical insulation, Prevent ion migration

Typical model

Model	Active component density	Viscosity (mPa·s)	Film thickness (μm)	Curing time at finger feeling
DP-508TH	8%	5	4 - 5	5-10 sec.
DP-520C	20%	30	10-20	5min.
DP-530C	30%	100	20-30	10-20min.

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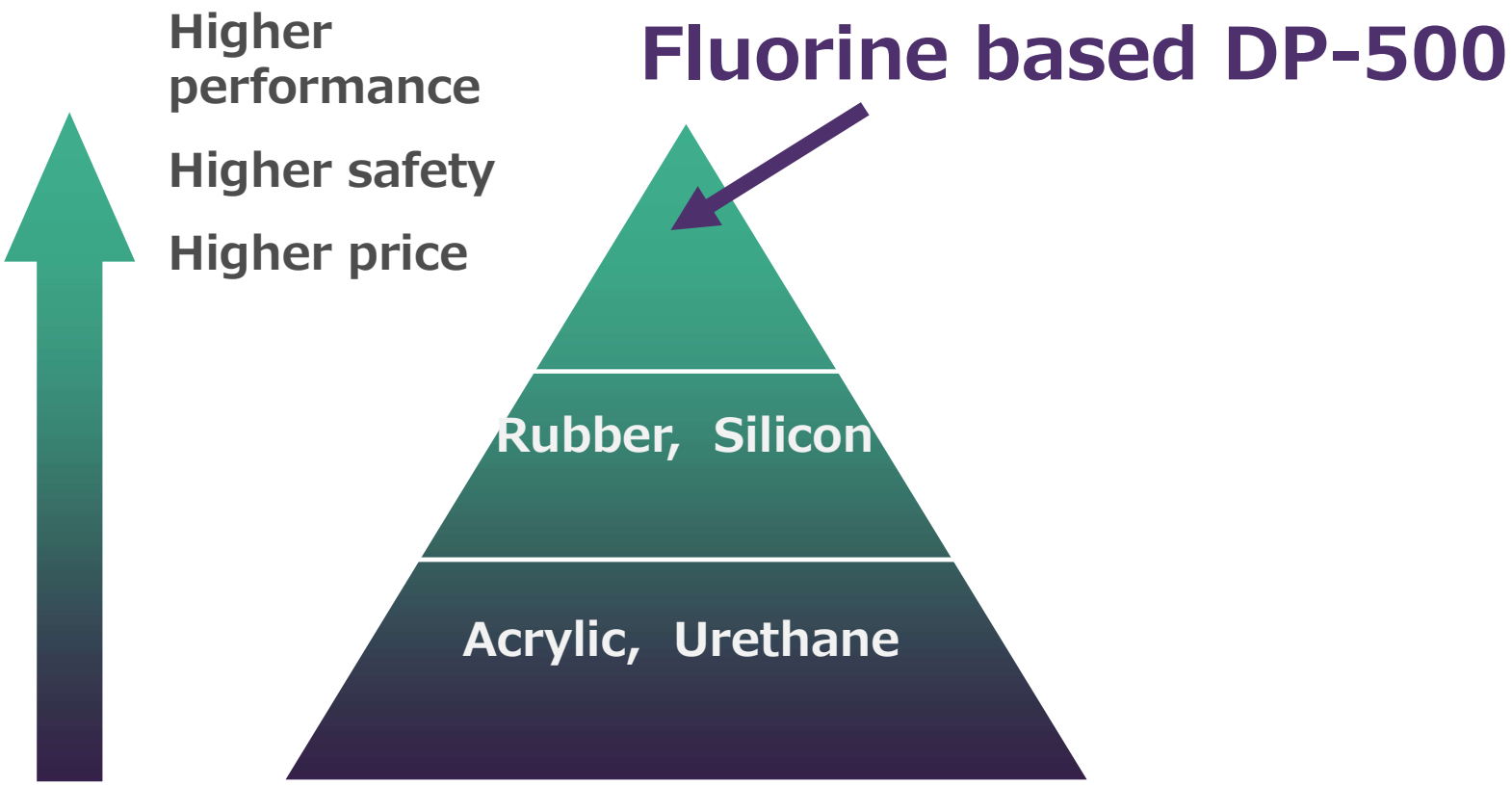
Market structure



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DURASURF Advantage of Fluorine based coating

1) Higher electrical insulation characteristic with thinner film thickness (less than 5µm)

2) Easy to apply thanks to low viscosity

3) Quick dry

4) Safe to handle thanks to non-flammable characteristic

DURASURF 1) Higher electrical insulation characteristic

Permeability（Film thickness : at 30μm）

Silicon	1,085
Urethane	279
Acrylic	232
Fluorinated	**93**

Unit（g/㎡/24H）

＊Test standard :JIS-Z0208 40℃/90%RH
＊Permeability :Volume of moisture penetration
The lower value, the better moisture barrier property

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DURASURF 2) Low viscosity, 3) Quick dry, 4) non-flammable characteristic

✓ Better workability, Short curing time thanks to quick dry property

→ Shorter coating process

✓ Neither space nor equipment for curing required

✓ No explosion proof equipment required. No special management required. Easy to introduce!

✓ Low odor, Low toxicity

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Application

Printed circuit board used in smart phone, tablet PC, Note PC or devices for outdoor use

Prevent ion migration

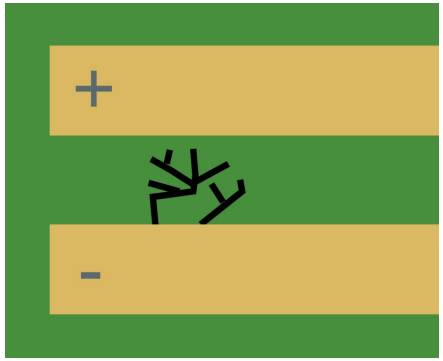
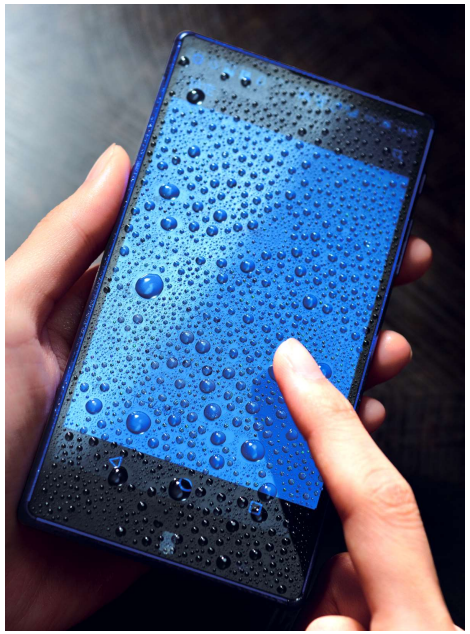


Image of Ion migration



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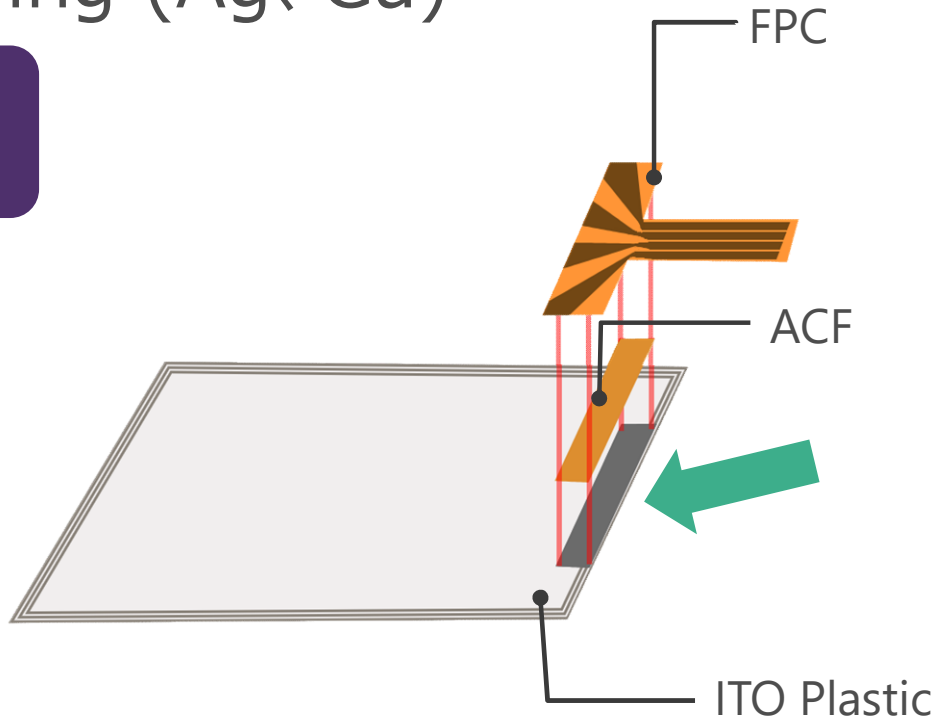
Application

Touch sensor for smart phone

1. FPCB crimping part, Exposed pattern
2. Narrow pitch wiring (Ag、Cu)

Prevent ion migration



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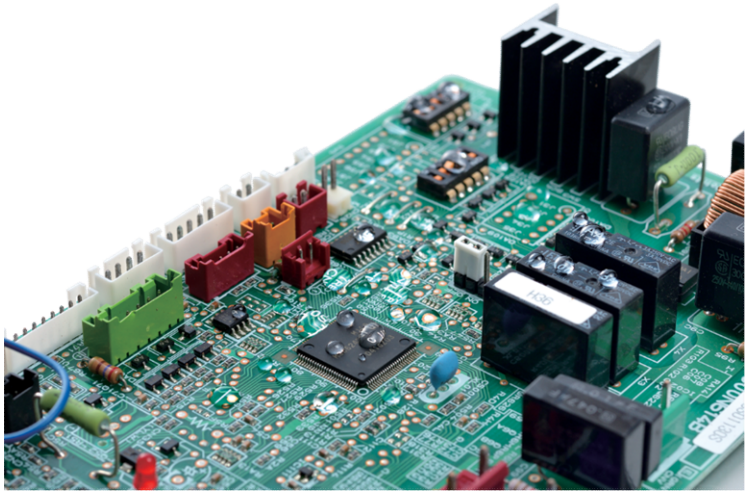
Application

Control circuit board for Lithium ion battery

For smart phone, Note PC etc.…

Resistant to electrode



Use for secondary countermeasures against shortage, explosion, igniting caused by electrode leakage

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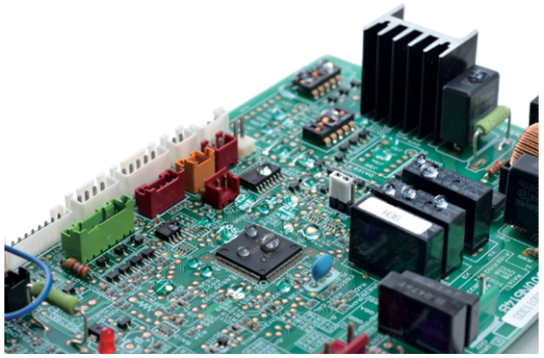
Application

Control circuit board for Lithium ion battery

Battery pack for electric vehicle, aircraft cabin, electric tools, electric bicycle, portable base station, server etc.…

Prevent ion migration
Prevent dew condensation



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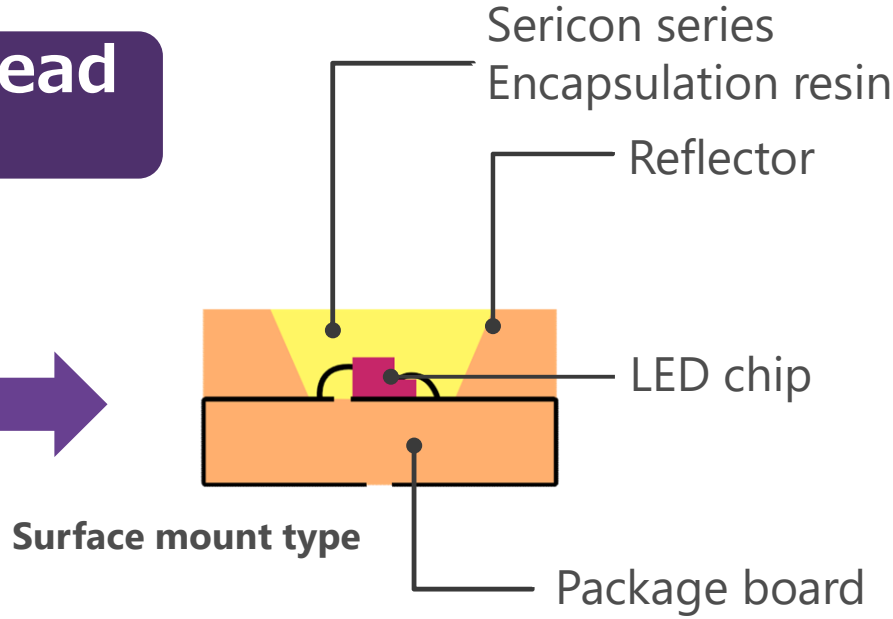
Application

LED lighting, Outdoor LED signboard

LED backlight, Liquid crystal display

Measures against Ag Lead Frame Sulfidation



No impact to brightness even if DURASURF is applied to luminous object (Yellowing resistance, low refractive index)

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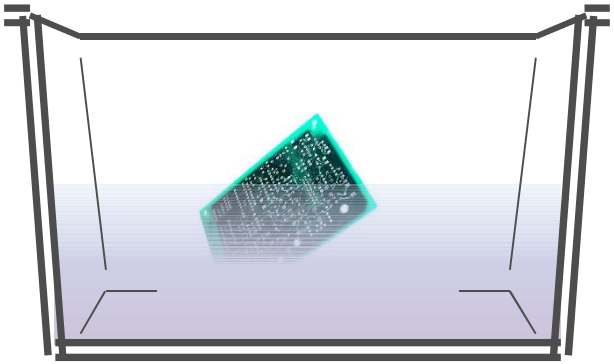
Coating method

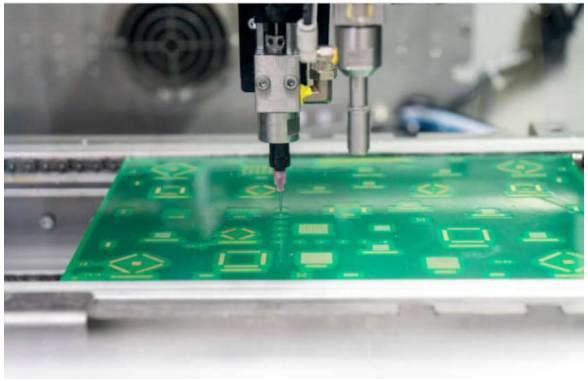
Coat with brush

Dipping



Spraying

Auto dispenser



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DURASURF Coating film typical properties

Pencil hardness	4B
water-repellent property	Water contact angle 112°
Oil-repellent property	n -Hexadecane contact angle 70°
Volume resistivity	(85℃、85% 1000hrs.) 3.88×10^{15} Ω・cm
Relative permittivity	2.54 /1MHz
Dielectric tangent	0.0233/1MHz
Dielectric strength	84 kV/mm
Moisture permeability **(**Converted value at 5 μm film thickness**)**	554 g/m^2/24H
Flame resistance	UL94（Vertical burning test） : V-0 relavent

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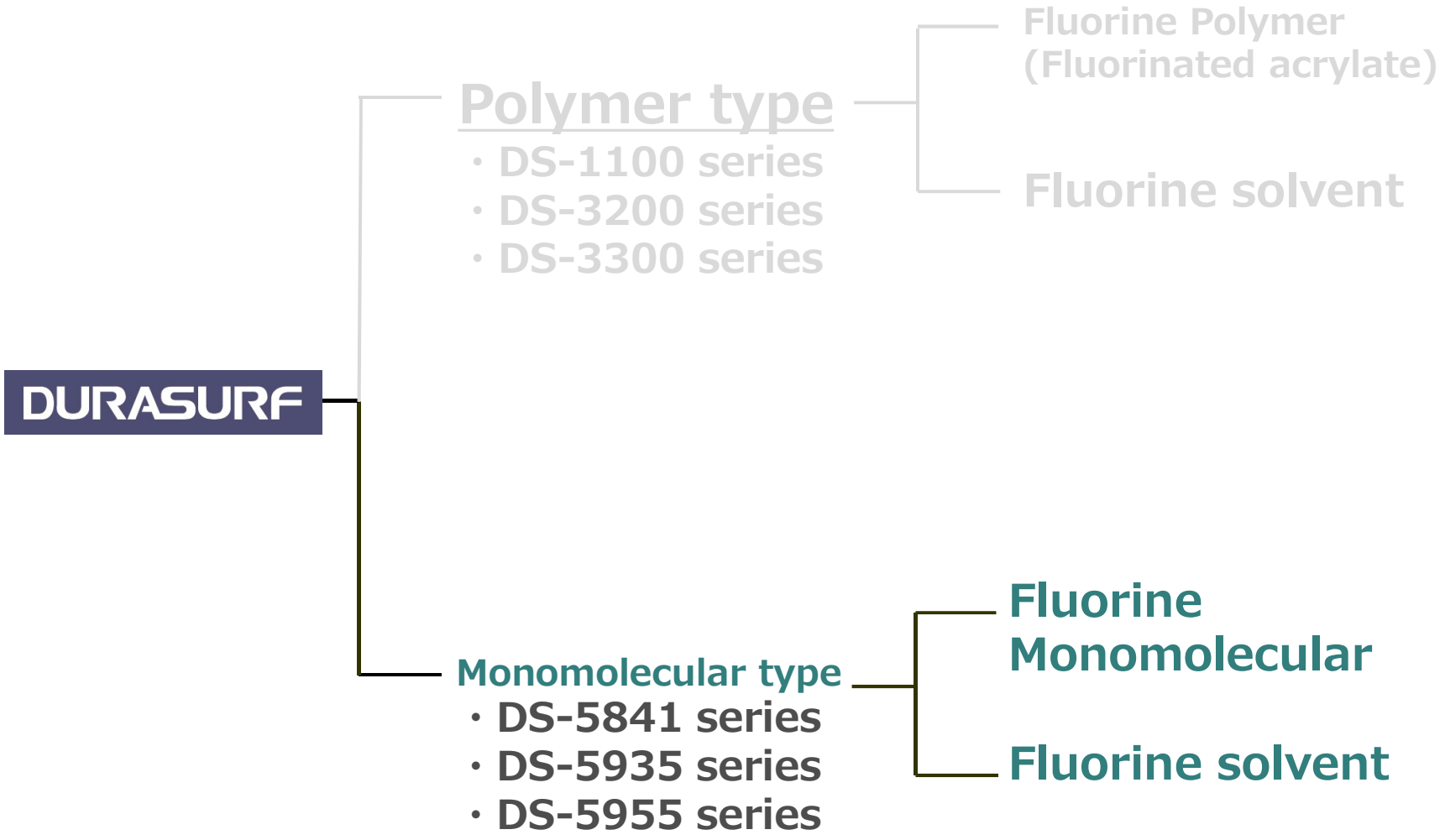
DURASURF Monomolecular type



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DURASURF Monomolecular type line up

Monomolecular film = Chemical reaction adsorption
= Wear resistant, Water / Oil repellent

Series	Application, Property
DS-5841 series	For glass, ceramic Antifouling, Anti-fingerprint, Good sliding / low friction
DS-5935 series	For metal, metal plating Antifouling, Anti-fingerprint, Good sliding / low friction
DS-5955 series	Metal mold releasing agent For high durability, precise casting

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DURASURF Common properties in each series

1. High wear resistance

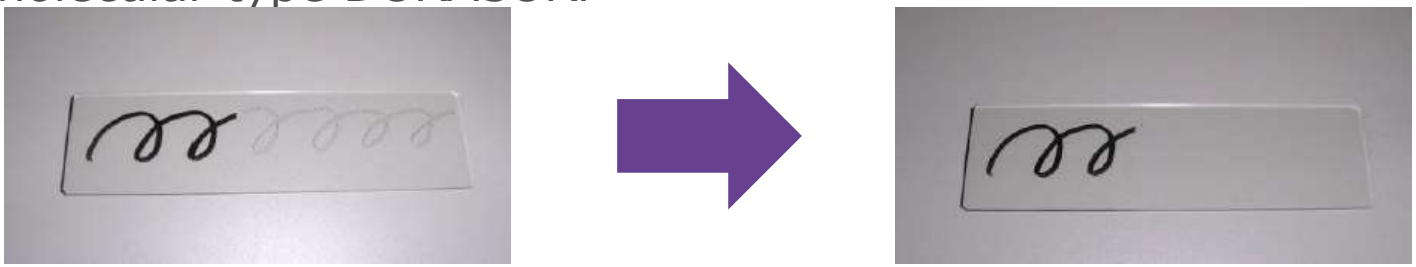
Form monomolecular film by chemical binding with glass or metal by reactive adsorption functional group

2. Ultra thin film thickness

Appearance is not impaired as film thickness in thinner than 20nm

3. Very good antifouling

Easy to clean stain=High liquid-repellent property＝Low slip drop angle
※ Slip drop angle on Polymer type DURASURF is higher than Monomolecular type DURASURF



Glass with DURASURF on the right half repellents to Oil-based ink

Easy to remove the oil-based ink on DURASURF coated surface

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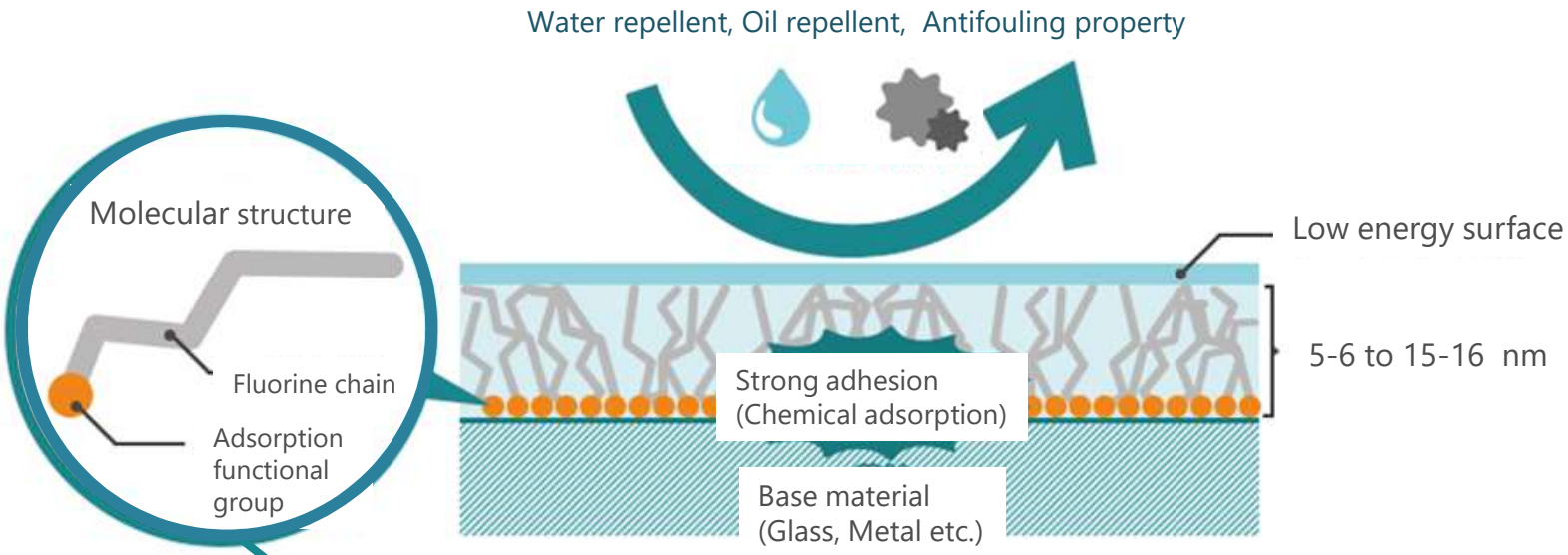
DURASURF How coating film is made?

Active group chemically adhere to glass, SiO film or metal oxide surface film, in this way, Fluorine-based monomolecular film is formed.



Molecular structure looks like hair

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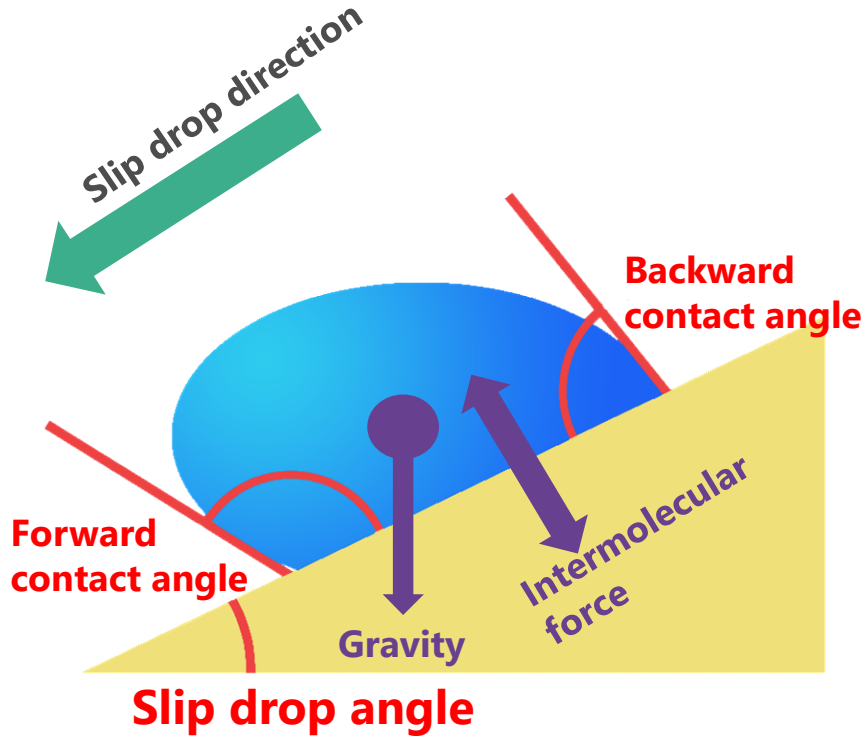
DURASURF Antifouling property

Antifouling, Anti-fingerprint

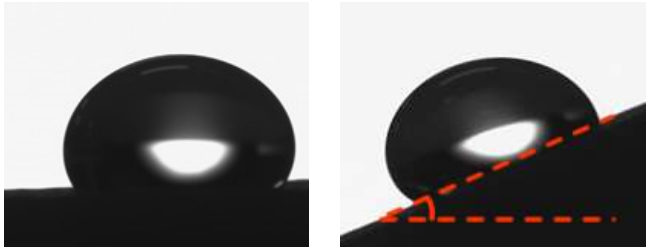
= Easy to remove stain or fingerprint

= High liquid-repellent property

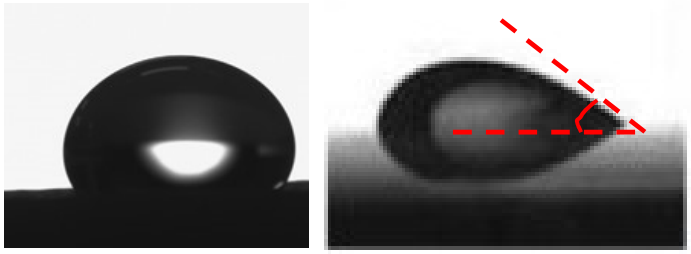
= **Low slip drop angle, high backward contact angle**



Slip drop angle



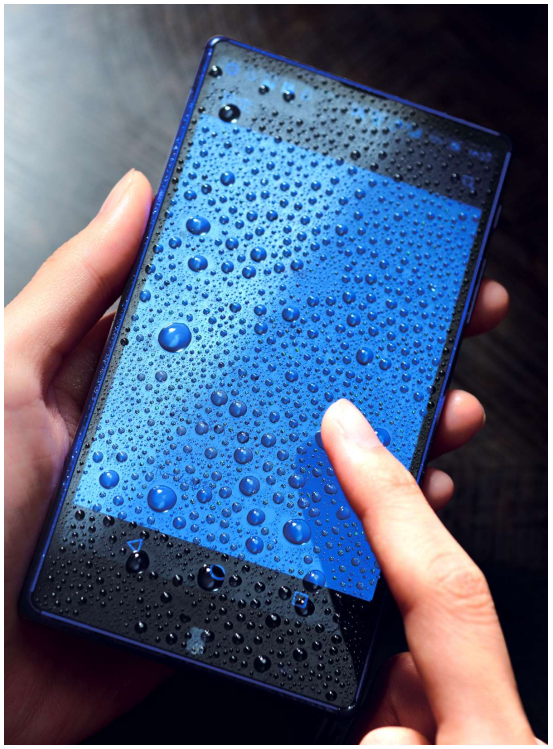
Backward contact angle



DURASURF Application ①

Kitchen top board

Elevator button, door



Smart phone display

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Application ②

★ Prevent touch panel of smart phone and/or gaming device from contamination by fingerprint

★ Minimize fingerprint contamination to metal interior parts

★ Minimize fingerprint contamination to plated parts used in vehicle interior

★ Minimize fingerprint contamination to jewelry

★ Minimize brake dust adhering to aluminum wheel

★ Minimize fingerprint contamination to glass door

★ Prevent from noise generated between metal parts

★ Mold release agent for nanoimprint process etc.

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DURASURF application process

Degreasing
(Solvent cleaning, vacuum plasma or VUV treatment)

Apply DURASURF
Any wet process,
such as, non-woven fabric, sponge, dipping, spray etc…

Drying
Drying by heating 100℃×60min.

or ＊Drying by heating recommended for application durability required.

Drying at ambient temp. Longer than 2 hrs.