

Introduction of AD-Tech COAT (Water-borne inorganic Coating agent)



(Nano particles of liquid ceramics coating materials from Japan)

Actual record at top companies of fields

Contribute to carbon free by Nano technology

Anti-dirt · Reduction of environment load · Save resource · Provision of CSR

New materials of high value-added by original development

Patent filed products (Japan, USA)

Considering future by carbon free nano technology

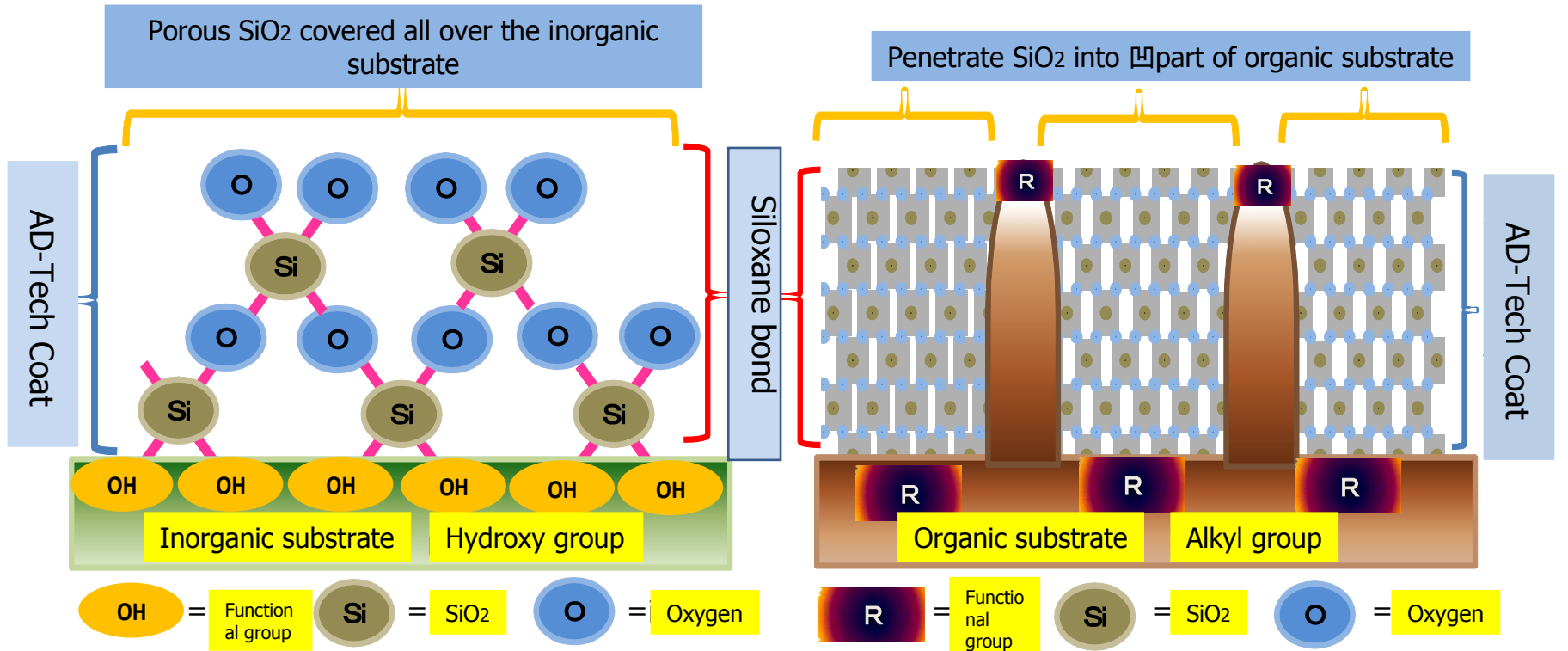
Trade Service Corporation

(Manufacture of water-borne inorganic coating agent)

AD-Tech COAT 6merits of water-borne inorganic coating agent

- * Water-borne inorganic coating agent >>> Use water as solvent VOC free
 - * Nano membrane >>> More less 50nm ultra thin membrane, about 400 textures at 1000n m²
 - * Carbon free >>> No degradation, discoloration, bleaching by ultra violet ray
 - * Super hydrophilic·high transparency >>> Preventing dirt·easy cleaning·improve permeability.
 - * Environment·save resource·safety >>> Not included VOC·reduce water & detergent.
 - * Full line up >>> From professional use to home use.
 - * Any substrate can be coated except paper, green wood, cloth.
 - for example; ·metal based =stainless steel, aluminum ,magnesium etc
 - resin based =plastics ,melamine plate,FRP etc
 - Organic based=paint finish lacquer finish surface etc
 - Inorganic based=Glass, marble, tile, sanitary ware(pottery),enamel etc. and even leather surface artificial leather etc.
- Correspondence from home use to industrial use ●

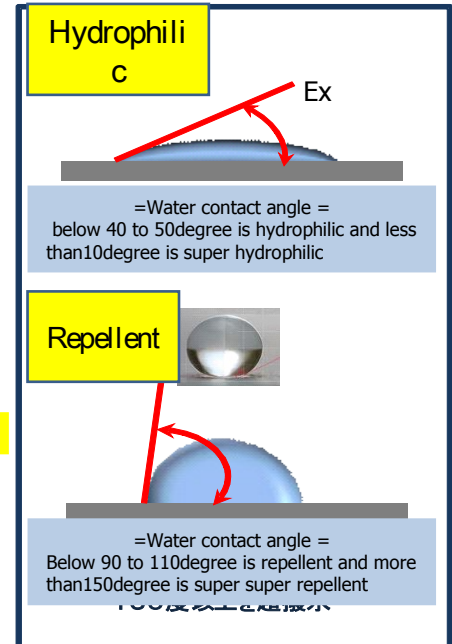
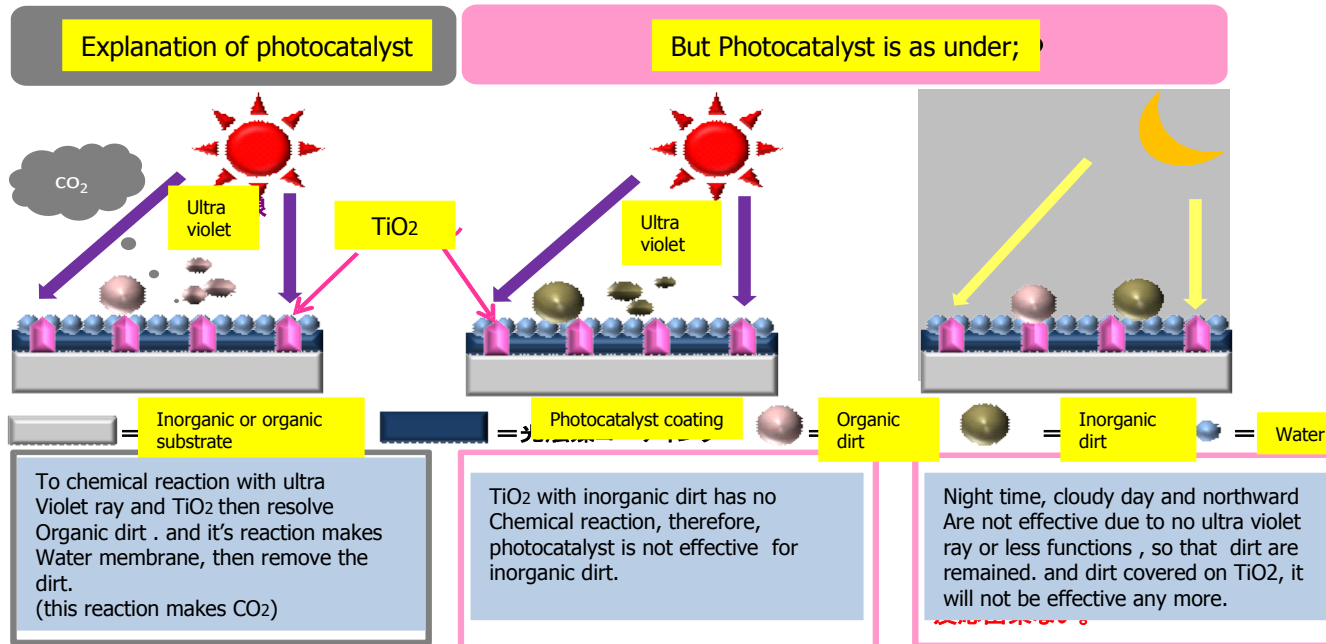
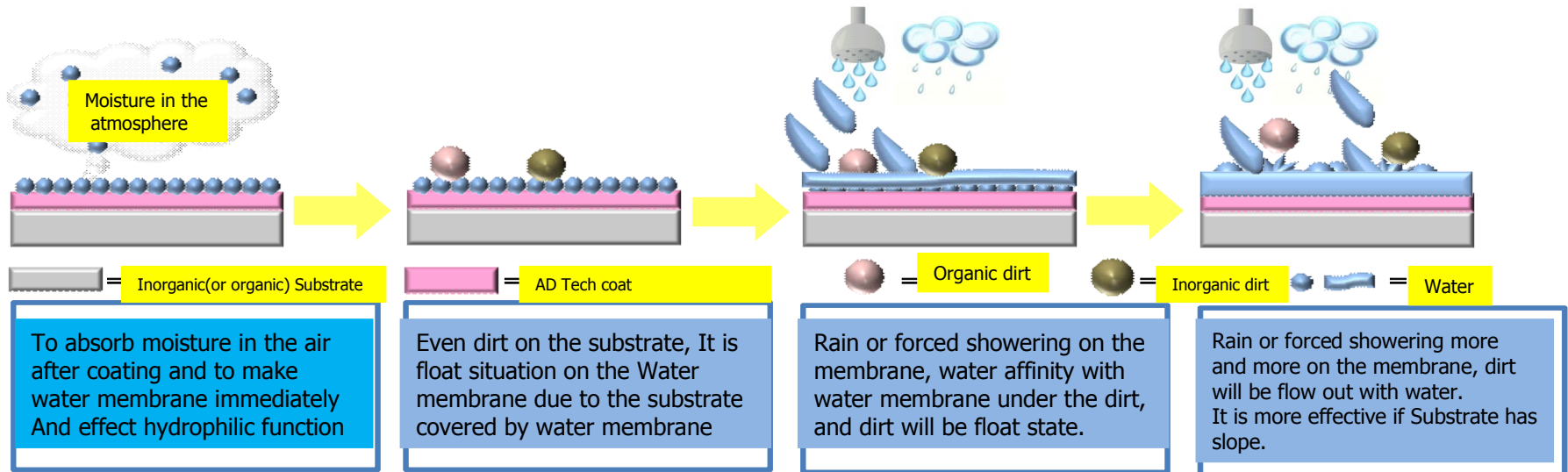
AD-Tech COAT Adhesion of Water-borne inorganic coating agent



AD Tech coat and Inorganic substrate has chemical bonded by Si-OH as hydrogen bonding (Ion bonding) then become Strong adhesion

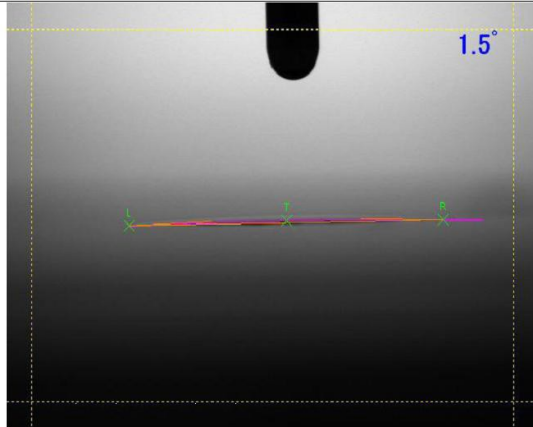
AD Tech coat penetrate part of organic substrate as anchor effect (No chemical bonding but Physical adhesion)

Difference Anti-dirt(hydrophilic) mechanism compared with photocatalyst

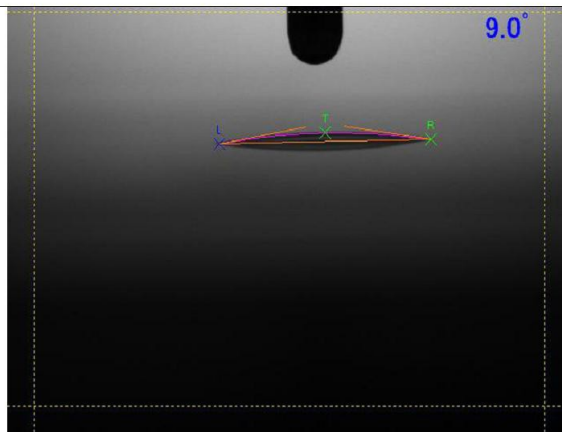


Hydrophilic Test (Measurement of water contact angle)

After Model;D-0215v4 slide glass contact angle 1.5degree



Blank slide glass contact angle 9degree



Model;D-0215v4

Substrate; Slide glass

Blank ; Contact angle...9degree

D-0215v4; Contact angle..1.5Degree

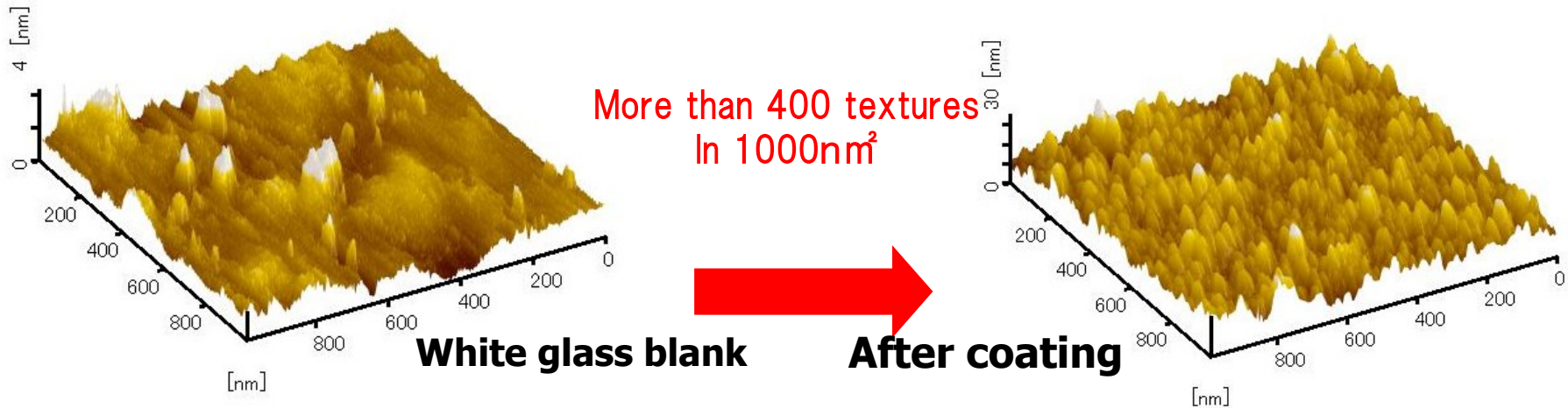
What is Hydrophilic;

In general, water contact angle with substrate below 50degree called hydrophilic state, and less than 10degree is super Hydrophilic.

By the way, photocatalyst is considered as about 10degree water contact angle as hydrophilic .

Remarks; Water contact angle is depend on surface state of substrate.

Nano technology



Measurement at Osaka university nano foundary

- Super hydrophilic with water-borne inorganic coating agent by nano technology
- Improved permeability, light harvesting and less reflectance by nano technology.
- Anti-dirt effect with nano particles of SiO₂ by hydrophilic function.
- Keep original surface appearance but just gives effect by nano membrane.

※Super hydrophilic function can enjoy only inorganic substrate.

AD-Tech COAT Actual record for usage

- * Prevent dirt for solar cover glass (to prevent of generation lowering aging due to dirt)
- * Stainless made of Elevator panel· kitchen equipment(sink) for finger print and easy cleaning from oil dirt.
- * Rail way car, Bus as transportation for easy cleaning (Japan rail way verification obtain.)
- * Car (Body, glass, wheel etc) to prevent from water spot & easy clean.
- * Office equipment (Copy machine, computer facsimile machine etc) to prevent dirt from static electricity.
- * Mobile phone, game machine, tablet PC etc such as small items for easy clean from dirt and finger print .
- * Public toilet for easy clean from dirt and smell.
- * Smoking room at Hotel for easy clean and prevent from dirt and smell.
- * Shorten cleaning time at home, restaurant, convenience store, fast food shop.
- * Shorten cleaning time for building maintenance, glass show case etc.

Many fields can be applicable with water-borne inorganic coating agent.

For example(stainless steel)

Left upper; show room Type-K

Left under; Hotel decoration post Type-K



Right upper; Elevator cargo panel Type-C

Right under; Type-C Oil based felt pen dirt removed state



For example(Car)

Left upper;High way bus window glass(Type-D)

Left under;Cold storage car inside(Type-C,D)



Right upper;TOYOTA car(Type-DC, D)

Right under;Opel car(Type-DC.D) this side coated, the other side non coat



VOC test evaluation certificate of AD-Tech Coat

試験結果成績書

0000000011号

依頼者

株式会社トレーダージャ 様

受付年月日	平成19年4月10日
検査年月日	平成19年4月10日～11日
検査種類	—
品名	セパレーターアジャスト
	（品名不明）
検査場所	東京1100株式会社研究開発部
検査者	東京1100株式会社研究開発部

計測法の標準規格(適用) 気体汚染物質測定法

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ご依頼いただきました試験品について試験を行った結果は、次の通りです。

試験の対象	試験の結果	試験の方法	
ホルムアルデヒド	0.5未満 [mg/m ³]	JIS A 2911 (2003) に準拠 試験条件 経過時間 24 (時間) 室内温度 25 (°C) 平均相対湿度 54 (%) 換気回数 0.1 (回/時) 試験室容積 0.048 (m ³) シールド 有 気流調整 F-017型: 0.048m ³ /分(0.0013m ³ /秒)×4 V-017型: 0.048m ³ /分(0.0013m ³ /秒) 試験装置 分析装置メーカー: 200,0000 空気汚染計: TP-2000 空気汚染計型: ADPL507	
アセトアルデヒド	0.5未満 [mg/m ³]		
トルエン	0.5未満 [mg/m ³]		
キシレン	0.5未満 [mg/m ³]		
p-ジクロロベンゼン	0.5未満 [mg/m ³]		
o-ジクロロベンゼン	0.5未満 [mg/m ³]		
メタン	0.5未満 [mg/m ³]		
エトキシベン	0.5未満 [mg/m ³]		
ノブチオール	0.5未満 [mg/m ³]		
TVOC	0.5 [mg/m ³]		
以下未計			
備 考			
発 行 日	平成19年4月10日	分析責任者	吉 野 秀 明 (環境計量士)

There is no detection of 52items of VOC test.

Table just show only 9 main items .

Combustion test report for Railway car

Test number ; 18-734 (Shinkansen exterior painted car combustion test)



AD-Tech COAT Specification

- * Normal temperature finish · immediate dry · ultra thin membrane specification

Main materials ; ultra minute particle of silicon dioxide.

Solvent ; Water

Type ; D, K (several models depend on usage) Option ; abrasives blending

p H ; 5 to 7.8 depend on Model

- * Normal temperature finish · immediate dry · ultra thin membrane specification
(Professional Spec.)

Main materials ; ultra minute particle of silicon dioxide.

Solvent ; Water

Type ; DC

p H ; 5.2 to 8.0 depend on Model

- * **Forced dry** · normal temp. dry combination type, thin membrane specification

Main material : Alkali metal silicate modification.

Solvent ; Water

Type ; C

p H ; 12.2~

Without notice, change specification for improvement of quality.

“ZERO” target of AD-Tech COAT

- * Normal temp.immd.dry ▪ ▪ ▪ ▪ ▪ After coat “ZERO” waiting time ! Effect immediately.
- * One –component liquid type ▪ ▪ ▪ No preparation of coating “ZERO” ! Usable at once.
- * Any weather applicable ▪ ▪ ▪ ▪ ▪ Moisture ,temperature effect “ZERO” ! (*1)
- * No loss of coating agent.▪ ▪ ▪ ▪ ▪ Loss “ZERO” ! Economical for cost per m².
- * Non small ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ VOC”ZERO” ! Work with safety.
- * No unevenness even cutoff work.▪ ▪ ▪ Evenness “ZERO” ! No mind for work.
- * No special machine required ▪ ▪ ▪ Investment “ZERO” ! Easy coating by normal tools
- * Anybody work without skill ▪ ▪ ▪ Special skill ”ZERO” ! Easy coating work.
- * Ultra thin membrane ▪ ▪ ▪ ▪ ▪ ▪ ▪ Recoat “ZERO” ! Shorten work time.
- * Improve transparency ▪ ▪ ▪ ▪ ▪ ▪ ▪ Glare “ZERO” !
- * Maintenance too easy ▪ ▪ ▪ ▪ ▪ ▪ ▪ At usual maintenance, detergent use “ZERO” ! (*2)
- * Good front view in rainy day ▪ ▪ ▪ Reflection by water dot “ZERO” !
- * Safety ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ Organic contents “ZERO” ! Mainly use silica & water
- * Protect surface by hydrophilic membrane ▪ ▪ ▪ Water spot “ZERO” ! By very thin water membrane. (*3)

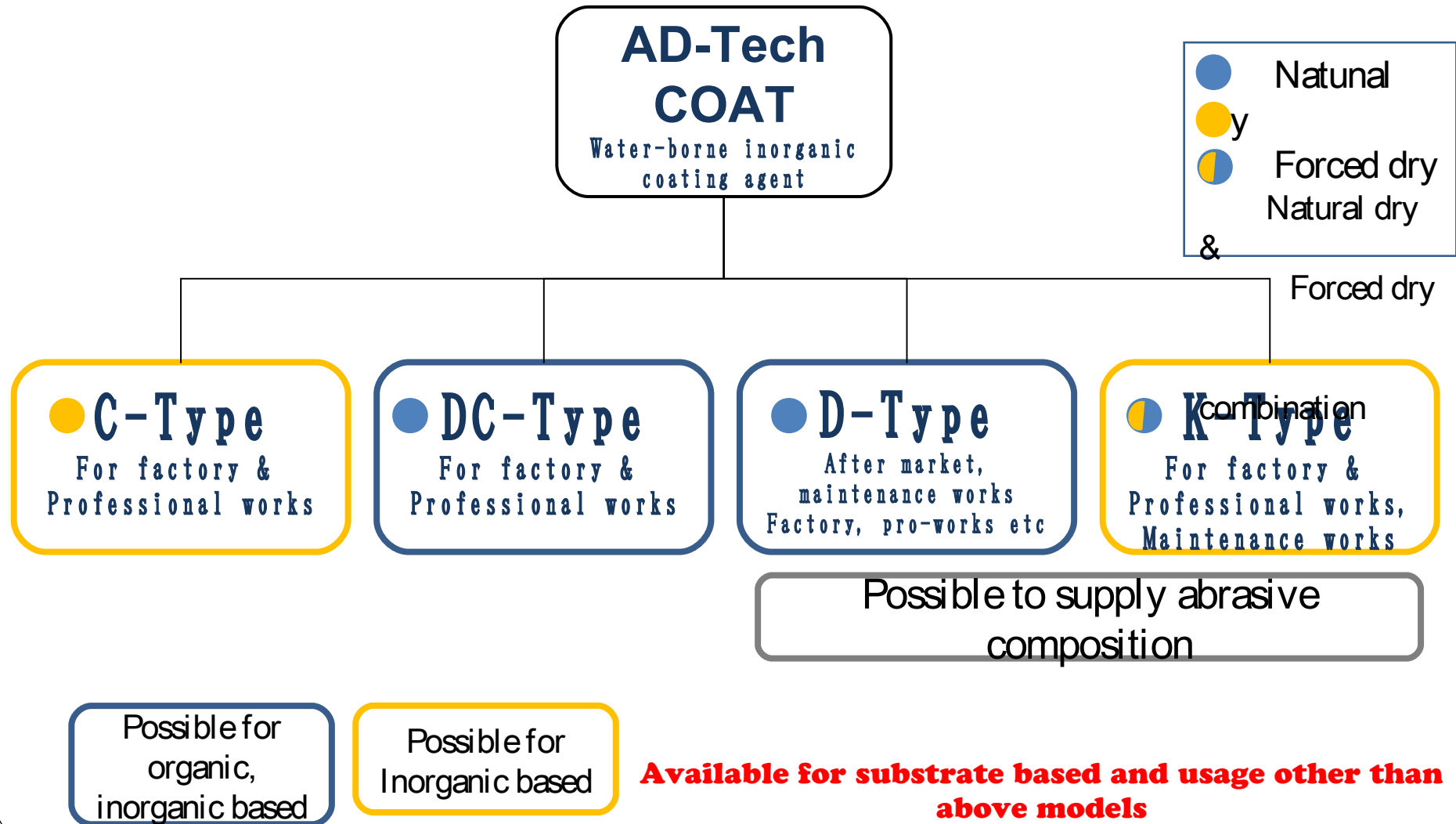
Self cleaning function by rain and forced showering water and keep clean all the time.
anti–static electricity by thin water membrane and reduce dirt in due course.

* 1 : Do not coat under high temperature from sun and temp. below 0 °C.

* 2 : Normal dirt can be removed by wet cloth to wipe, but hard dirt needs detergent some times.

* 3 : To maintain well after coating, water spot can be reduce a lot if not special circumstance.

AD-Tech COAT of Line up



Comparison (AD Tech Coat and Photocatalyst)

	C-Type	D-Type	Photocatalyst
Main ingredient	Alkali metal silicate modification	Silicon dioxide	Titanium dioxide
Solvent	Water	Water	Isobutanol or Methanol
Hydrophilic	Yes	Yes	Yes
Hydrophilic mechanism	Moisture in the Air	Moisture in the Air	Ultra violet ray
Membrane hardness	Force dry(9H) Natural dry(6H)	Not hardening	More than HB After coat 7days
Main effect	Anti-dirt • anti-scratched	Anti-dirt	Anti-dirt • organic resolution
Applicable substrate	Inorganic substrate except glass (mainly metal)	Organic • inorganic substrate except paper ,green wood & cloth	Mainly inorganic • need primer for organic substrate. but for glass is not suitable
Workability	Need skill	No skill required	Need skill
Maintenance	Almost free maintenance	Recoatable	Not recoatable
Environment	VOC free	VOC free	Use organic solvent
Applicability	Limited to inorganic substrate	Any substrate other than paper, green wood ,cloth	Limited to inorganic substrate

Thanking for your attention
Trade Service Corporation
Japan