

S880V Development introductory material



1. Product development suitable with market changes

- Existing AF products continuous use the highest quality raw materials which are suitable with high-end customers' models

-> The necessity of redevelopment in case of general specifications that do not change specifications

2. Development of low-cost AF products (alcohol/without alcohol abrasion, standard: 3000 cycles)

- Purpose of expanding AF low-cost Biz in Korea and China

3. Development direction

- PFPE Development (main materials)

-> Development of various products through PFPE blending

-> Blend high and reasonable PFPE

- Wet solvent development (solvent)

-> Blend PFPE types and solvents together to create solvent fluorine variety.

-> Based on the developed PFPE optimize fluorine development

1. Vitalik

- S880V evaluation in August, 2021 (previous delivered S880)- Monthly average delivery of 2.5ton

-> Evaluation results passed all alcohol/ without alcohol abrasion and experimental environment.

-> Delivered S880 low-end (S880V) from September

2. Lens

- In September 2021, S880V evaluation completed(current delivering S880)-Monthly average delivery of 1ton

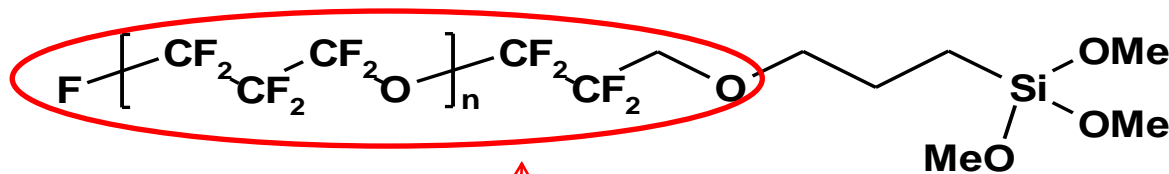
-> sent quotation for S880V and waiting for reply.

3. Biel

- Request evaluation, but can't conduct evaluation because they use their own reagent _
Total 5.7 Tons were delivered in 2021

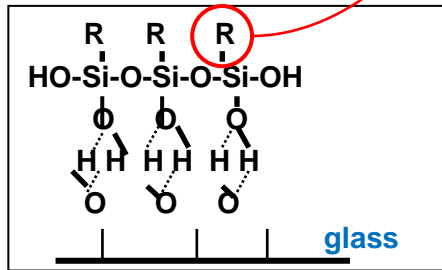
-> all delivered S880 are using for Huawei.

- *PFPE polymer chemical structure

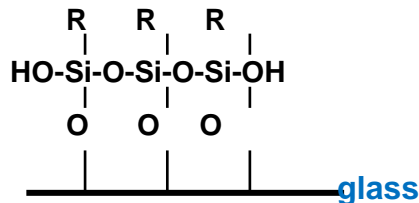


- F : flo
- CF2 : fluorocarbon
- OMe: Methoxy(OCH3)
- R : PFPE polymer

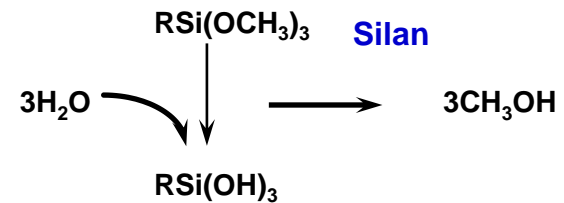
Hydro bond



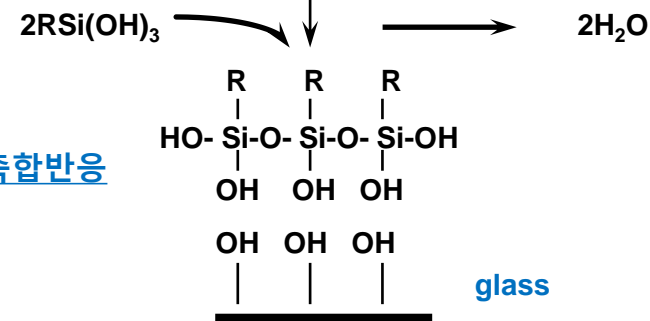
화학결합형성



가수반응



축합반응



4. Comparison between S880 and S880V

Man, Material, Technology

Division	S880	S880V	Note
Subject	D/S blending company	Blending company D/S	Develop the most suitable blending conditions
Diluent	M company	Y company	Final selection after evaluation about 20 diluents
Mechanism	PFPE Silane	PFPE Silane	Same mechanism
Wear resistance	At least 4000 times	At least 4000 times	Equivalent to existing
Drug resistance	At least 4000 times	At least 4000 times	Equivalent to existing
Haze appearance	minuteness	minuteness	Equivalent to existing
Exterior stains	Excellent	Excellent	Equivalent to existing

5. S880V product properties

Ingredient	Name	%
Salvage fee	Solid Contents 20%(PFPE)	0.3~0.5
불 소 Solvent	C5~C18 Perfluoro Compound	99.5~99.7

Item	Main characteristics
(물질형태)Specific Physical Form	(액체) Liquid
(냄새)Odor	(냄새 없음) odorless liquid.
Color	Colorless.
(비중)Density	1.80±0.07g/cm ³ (20°C)
PH	자료없음
(점도)Viscosity	1.46±0.12 (cp) (25°C)
(끓는점)Boiling Point	108~128 °C @ 760 mm Hg
(어는점)Melting Point	-65 °C
Flash Point	None

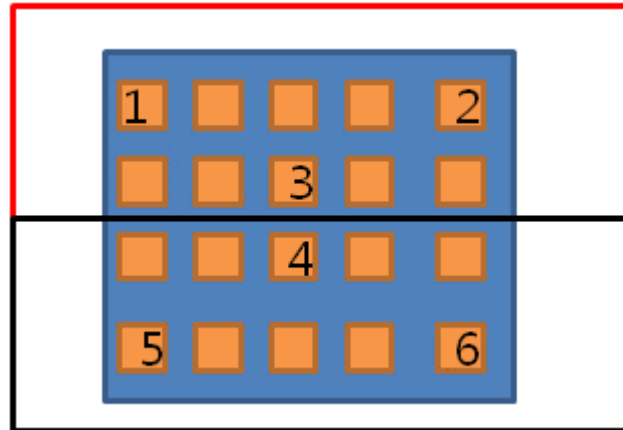
MMT setting process conditions (based on Spray equipment)

Division	Drying temperature	Drying time	Glass moving speed	Nozzle speed	Nozzle height	Distance between nozzles	Spray pressure
MMT condition	150°C	15 minutes	fix	400mm/sec	50mm	shorten	0.04 Mpa

- Process conditions differ depending on the spray equipment
- It is necessary to set process conditions according to facility characteristics by supporting MMT technical personnel in development stage

7. S880V AF Test Result Summary

Division	Abrasion measure without alcohol	Abrasion measure with alcohol	Salt spray (3 days)	Salt pray (7 days)
Reliability evaluation	1kg / 4000 episode (more than 100°)	1kg / 4000 episode (more than 100°)	PASS (115°->110°)	PASS (115°->109°)



	Wear resistance	Drug resistance	Salt spray(3days)
Reliability evaluation by location	3000 episode(116°->110°)	3000 episode (116°->108°)	PASS (116°->110°)

1. Evaluation 1

Division		Initial angle			Abrasion measure without alcohol				Abrasion measure with alcohol			
					3000	4000	5000	8000	3000	4000	5000	8000
1	S880	118	118.6	118.7	114	114	111	116	115	112	108	NG
2	S880V	116.2	117.2	116.3	109	107	103	NG	108	107	107	NG

2. Evaluation 2

Division		Initial angle			Abrasion measure without alcohol				Abrasion measure with alcohol			
					3000	4000	5000	8000	3000	4000	5000	8000
1	S880	118	118.6	118.7	118	117	118	110	114	115	118	OK
2	S880V	116.2	117.2	116.3	111	108	107	NG	109	108	NG	NG

3. Evaluation 3

- In September, June 7 lot result evaluation is normal.

Customer Satisfaction, from the QCD

감사합니다...