

# Additives for Coatings



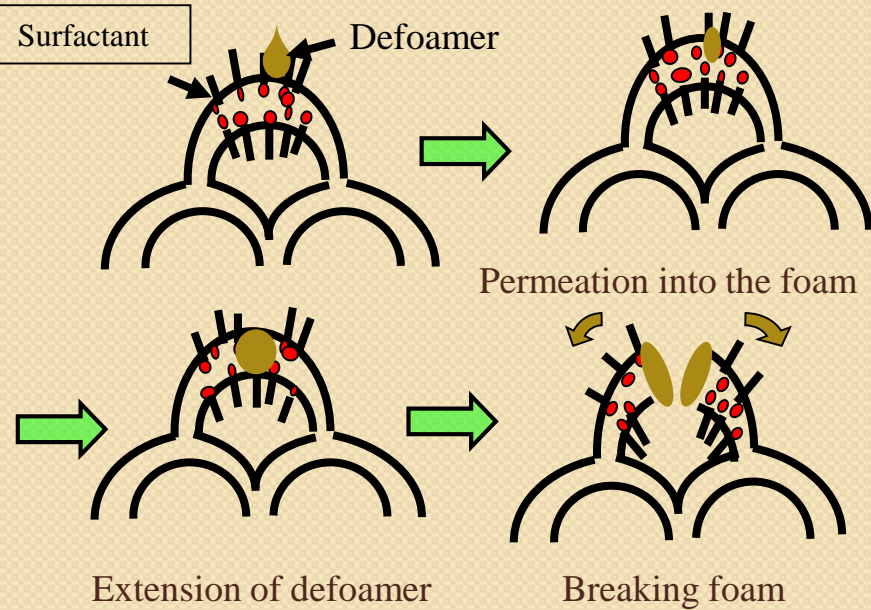
**J&C Global Tech. Co., Ltd.**

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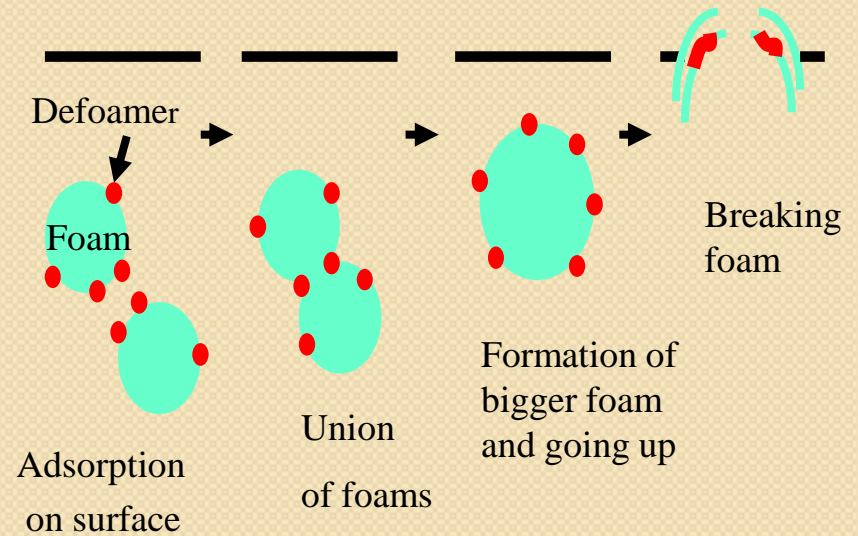
1. Defoamers
2. Dispersant
3. Rheology modifiers
4. Preservative
5. Wetting agent
6. UV-Monomers

# 1-1. Mechanism of Defoamer

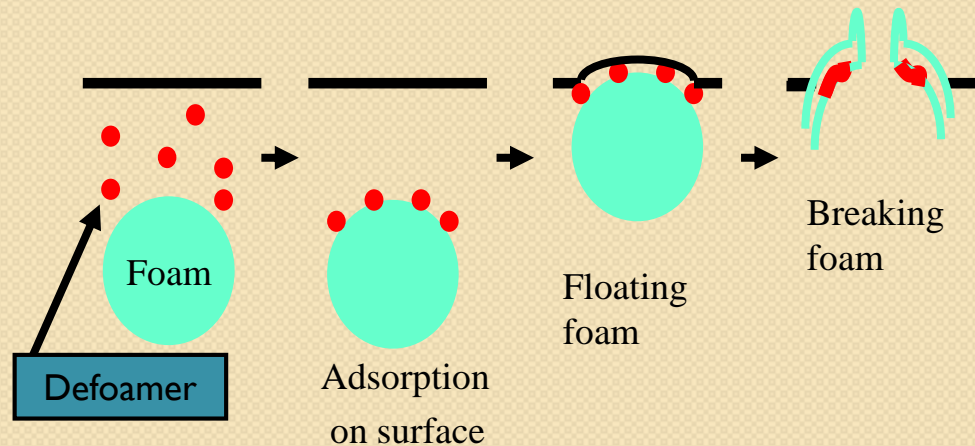
## Foam Breaking



## Deaeration



## Anti-foaming



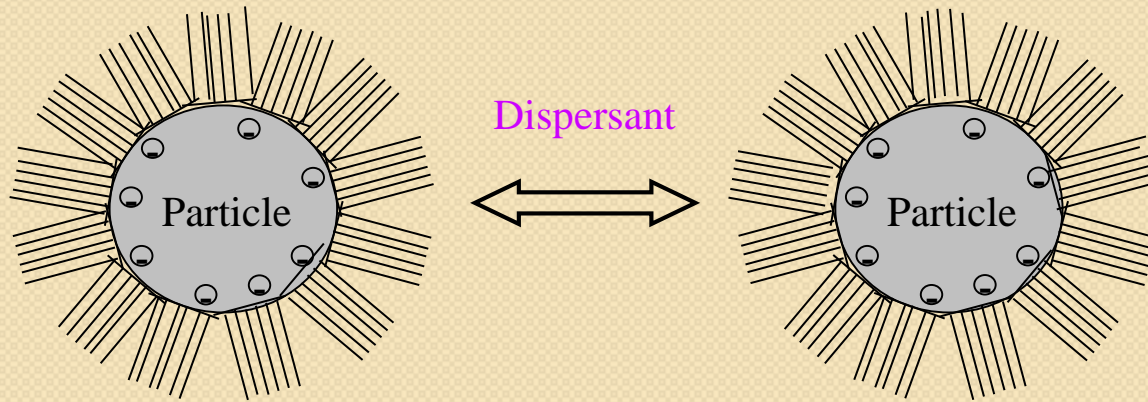
# 1-2. Classification of Defoamer

Type	Composition	Feature	Application	Product Name
Mineral Oil type	Mainly mineral oil	1. Construction paint, Finishing Materials, Latex, etc, wide usage	Matt, Semi-gloss, emulsion, Latex, Plastic, etc	
Modified silicon type	Strong lypophilic silicon oil emulsion	1. No gloss loss 2. No color identification	Clear Paint, Less PVC contents paint for wood, Gloss paint, etc	
Oil based type	Modified fluor Poly-siloxane	1. Very strong defoaming property 2. Excellent performance at paint formular without aromatic solvent	Acryl,Alkyd paint, Stoving paint, Oil-based type paint	
Silica silicon type	Adsorption with SiO <sub>2</sub> and Silicon	1. Stable to Crater on film surface 2. Wide usage	Latex, Emulsion, Aquous paint, Ink ,Adhesives, Finishing materials, Futty, etc	
None silicone type	Special Polymer (Amide, Polyether, Powder type, etc)	1. Good anti-foaming performance 2. Improved dispersible in water 3. Control film trouble like crater, etc 4. Good gloss improve property	Aquous resin, ceramics, Aquous paint	

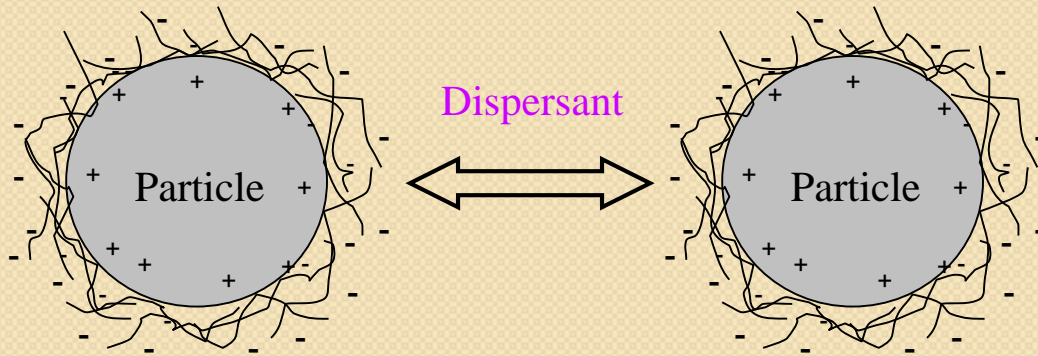
# 1–3. Product list of defoamer

Type	Usage	Product Name	Feature	Counter type
Constructional Paint	Flat paint	DIAF 33	- Excellent foam breaking and anti-foaming ability - Good for foam-prone conditions such as roller coating - Water based semi-gloss emulsion paint. Exterior finishing material,	DAPRO 7010, ADEKANATE B556
		DIAF X	- General purpose defoamer for various fields. - Synthetic latex, emulsion paint, Adhesive, construction putty	
		DIAF W	-General purpose defoamer for various fields. - Latex, acryl acetate, EVA, acryl emulsion, construction putty, adhesive.	
		DIAF 100	- Excellent foam breaking and anti-foaming ability for water based emulsion - FLAT, SEMI-GLOSS emulsion paint. Exterior finishing material.	
	Semi-gloss paint	DIAF 803	- General-purpose defoamer which has good anti-foaming ability - Good coating film without crater, gloss loss - Latex, Water based paint, emulsion, ink, adhesive, Finishing materials	BYK-034
		DIAF 700	- Excellent foam breaking and anti-foaming ability at any system - Good at foam on surface and micro foam in liquid - Suitable Zero VOC	BYK-012, 014
	Hi-gloss paint	DIAF 999	- Excellent performance in anti foaming - Less gloss loss and less craters - Water based paint, ink, emulsion and adhesive	BYK-024, FOAMAX 825, COGNIS 1620
		DIAF 111	- Product with improved the performance of SN-DEFOAMER 399 -Less gloss loss and less craters, excellent foam breaking and long-lasting anti-foaming ability. - Water based paint, ink, emulsion and adhesive. Paint for low pollution	BYK-024, COGNIS 1293
	Elastomeric Paint	DIAF 400	- Silicon type defoamer for high viscosity -No degradation in gloss and micro-foam - Silicon elastic paint. High viscosity paint	ADEKA B187
Powder	Powder	DIAF 40P	- Pre-mix type powder defoamer -Excellent foam breaking performance for quality improvement of products - For various type of powder	
Automotive and Industrial	Electrodeposition coat	DIAF 900	- Good ability to decrease the surface tension, -Good wetting and leveling effect. - Automotive coatings, water based paint, ink and emulsion, adhesive.	

## 2-1. Mechanism of Defoamer



Dispersing Performance from Steric Hindrance



Dispersing Performance from Electrostatic Repulsion

## 2-2. Product list of Dispersant

Application	Product Name	Type	NV	Feature	Counter type
Inorganic Pigment	DIDS 400	Polycarboxylic acid sodium salt	43%	<ul style="list-style-type: none"> <li>- Effective for decreasing viscosity of slurry and dispersing TiO<sub>2</sub>, CaCO<sub>3</sub>, inorganic pigment</li> <li>- Very stable to temperature and no effect to increase viscosity</li> <li>- For water soluble</li> </ul>	OROTAN 963
	DIDS 340	Polycarboxylic acid sodium salt	45%	<ul style="list-style-type: none"> <li>- Excellent dispersing performance for PCC, inorganic pigment</li> <li>- Good quality for storage.</li> <li>- Dispersant for water based</li> </ul>	OROTAN 850, COGNIS 5040
	DIDS 800	Polycarboxylic acid	50%	<ul style="list-style-type: none"> <li>- Excellent dispersing performance for PCC, inorganic pigment, concrete</li> <li>- Good quality for storage.</li> <li>- Dispersant for water based</li> </ul>	
Give water resistance	DIDS-202	Polycarboxylic acid ammonium salt	30%	<ul style="list-style-type: none"> <li>- Good water resisting, and rust resisting quality</li> <li>- Effective for inorganic pigment such as TiO<sub>2</sub>, clay. etc</li> <li>- For water based emulsion paint, waterproof flooring material.</li> </ul>	OROTAN 73I
	DIDS 460	Polycarboxylic acid ammonium salt	40%	<ul style="list-style-type: none"> <li>- Excellent dispersing effect for organic and inorganic pigment</li> <li>- Improve water tolerance and rust resisting quality</li> <li>- For water based emulsion paint, waterproof flooring material</li> </ul>	

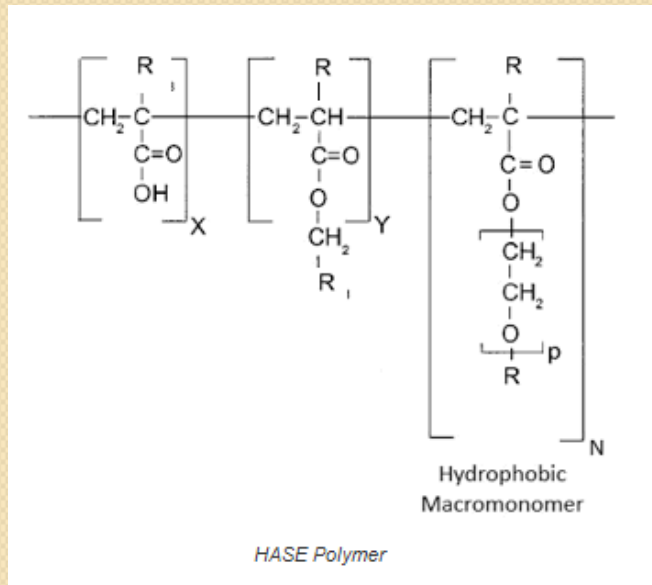
## 2-2. Product list of Dispersant

Application	Product Name	Type	NV	Feature	Counter type
Organic Pigment	DIDS 150	Polycarboxylic acid	35%	<ul style="list-style-type: none"> <li>- Excellent performance for dispersing organic pigment and carbon black</li> <li>- Good water resistance and rust resistance</li> <li>-For water based flexography and gravure ink, industrial paint, pigment toner, inkjet ink</li> </ul>	TEGO DISPERSE-760W
	DIDS 100	Polycarboxylic acid	40%	<ul style="list-style-type: none"> <li>- Excellent performance for dispersing TiO<sub>2</sub>, organic pigment and carbon black</li> <li>-Excellent performance of decreasing viscosity, coloring, water resistance and rust resistance.</li> <li>-For water based paint, automotive coatings, wood coatings, flexography and gravure ink</li> </ul>	BYK-190
Oil-based	DIDS 220	Polycarboxylic acid amine salt	50%	<ul style="list-style-type: none"> <li>- Excellent wetting, anti-settling, dispersing performance for oil based paint and ink</li> <li>- For alkyd, acryl, epoxy, chlorinated rubber, polyurethane, vinyl chloride resin</li> </ul>	BYK-115
	DIDS-230	Polyethylene	100%	<ul style="list-style-type: none"> <li>- Excellent performance for processing PVC plastisol</li> <li>- Very effective for dispersing CaCO<sub>3</sub>, TiO<sub>2</sub>, ZnO</li> </ul>	BYK-110

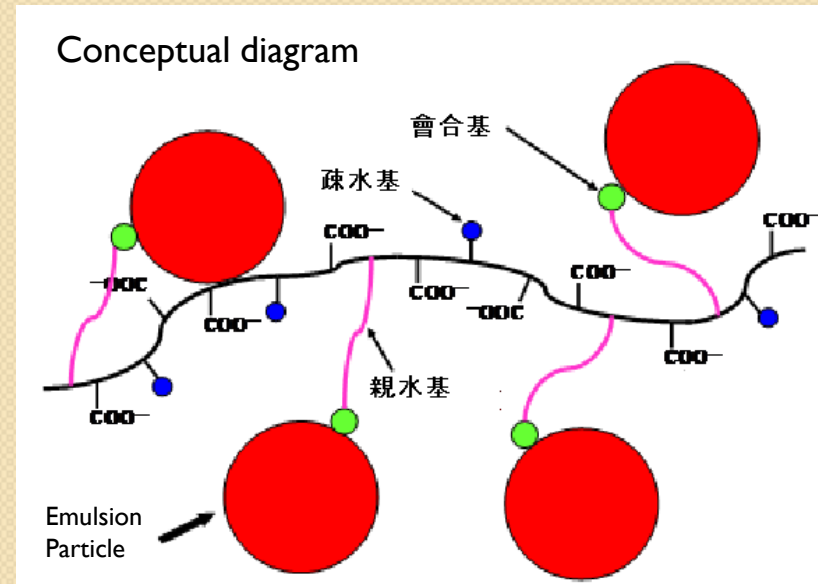


### 3-1. Mechanism and structure of HASE rheology modifier

#### 1. Structural formula



#### 2. Mechanism



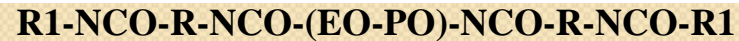
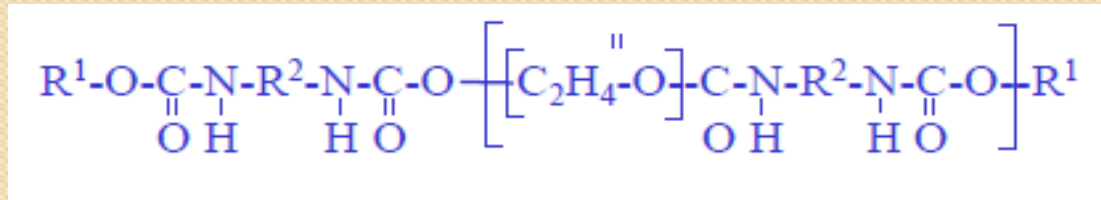
Linear copolymer => APO free => Side long chain

3-2. List of HASE rheology modifier

Product Name	Type	VOC	Application	Feature
DIVM 180	Modified Poly-acryl emulsion	Free	Emulsion paint, water based paint	<ul style="list-style-type: none"><li>- Water soluble product for coating color.</li><li>- Good decay stability.</li><li>- Improve flow and repair property, give good thixotropic performance</li><li>- NP free type</li></ul>

### 3-3. Structure of Urethane Rheology modifier(HEUR)

#### \* Structural formula



#### Type and function of the molecule parts **R1**, **NCO**, **EO-PO**:

**R1:** Hydrophobic end groups

(long alkyl chain hydroxy or amine compounds)

onto non-polar molecule surfaces (emulsion, pigments) result in formation of a three dimensional network

**NCO:** Urethane-Groups

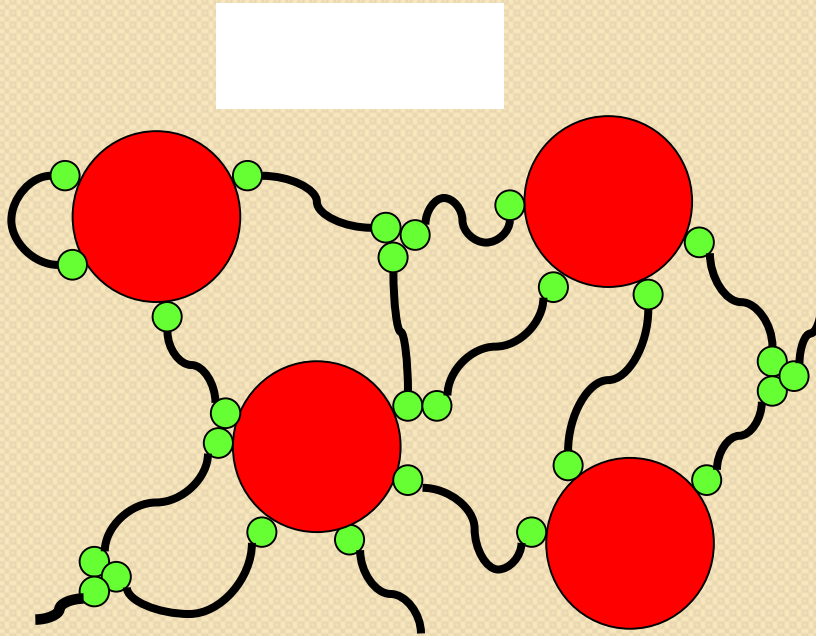
Links in the thickener. Can form hydrogen bonds

**EO-PO:** Polymer backbone

Provides water compatibility of the thickener and formation of hydrogen bonds

### 3–4. Mechanism of Urethane Rheology modifier(HEUR)

#### \* Mechanism of thickener



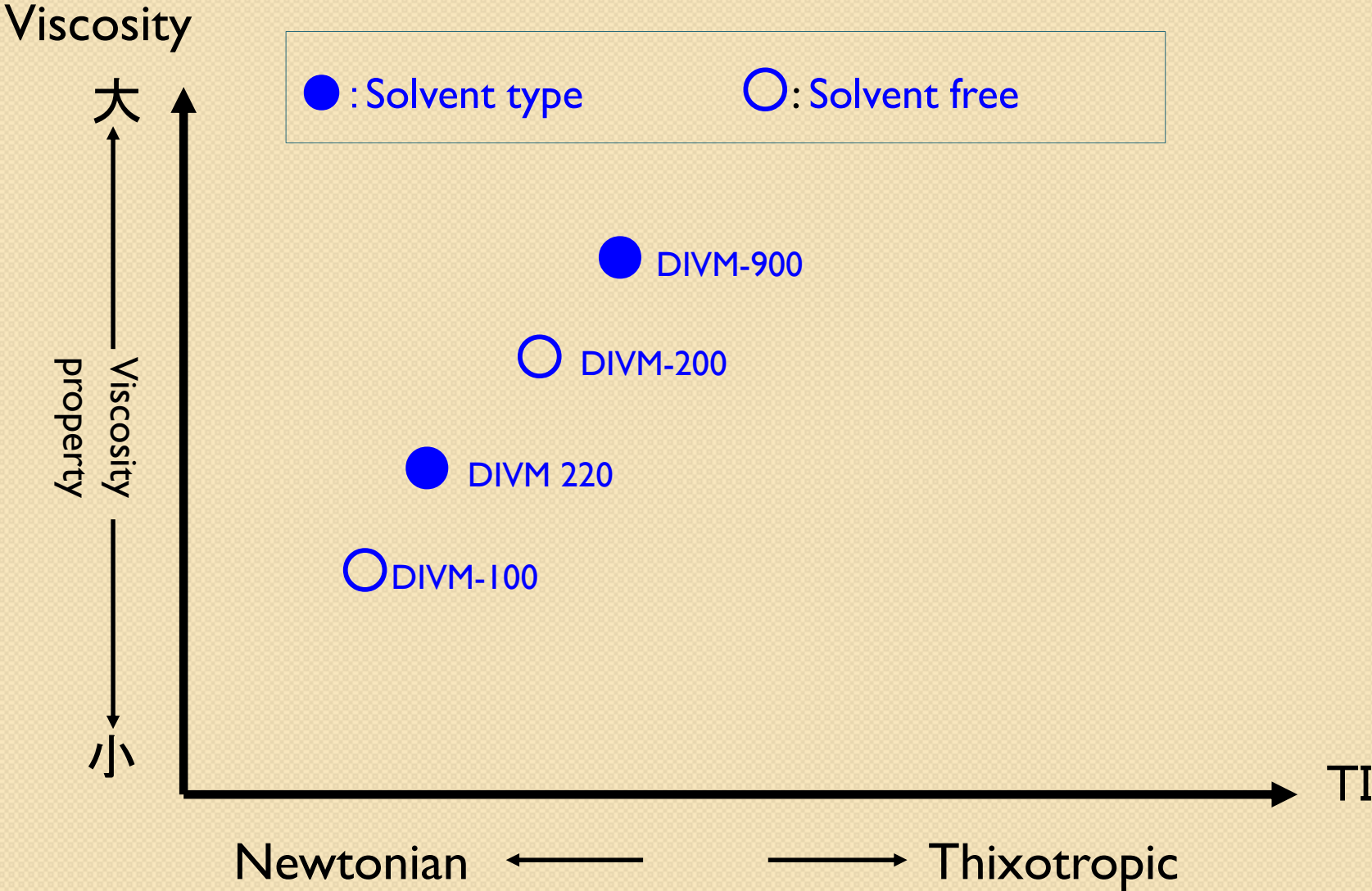
#### \* Upgrade flow

Chain length => Hydrophobic index, Amine => Solvent free

### 3–4. List of Urethane Rheology modifier(HEUR)

Product Name	Type	VOC	Application	Feature
DIVM 220	Urethane modified polyether	Contain	-Water based emulsion paint, emulsion adhesive, - water based ink	-Thickener which has strong thickening and good leveling performance - Good adhesiveness for elastic paint and tile paint - Viscosity and pattern can be controlled using with thixotropic thickener
DIVM 200		Free	- Emulsion paint, water based paint, emulsion adhesive, water based ink	- Solvent free, eco friendly Zero VOC type - Good flow and leveling performance, no gloss loss - Viscosity and pattern can be controlled as its thixotropy property
DIVM 100		Free	-Emulsion paint, water based paint, emulsion adhesive, water based ink	- Solvent free, eco friendly Zero VOC type - Good flow and leveling performance, no gloss loss
DIVM 900		Contain	-Emulsion paint, water based paint, emulsion adhesive, water based ink	- Good thermo-sensitive and good toning property - Good flow and leveling performance, no gloss loss -Viscosity and pattern can be controlled as its thixotropy property.

3-5. Chart of Urethane Rheology modifier(HEUR)



## 4. Product List of Preservative

Product Name	Type	Application	Feature
DIPR 300	Hydro alcohol	- Water based color, resin, emulsi on paint	<ul style="list-style-type: none"><li>- No heavy metals contained</li><li>- Effective for pH more 8</li><li>- Safe sterilizing effect. no bad odor.</li></ul>
DIPR 200	Triazine	- Water based color, resin, emulsi on paint	<ul style="list-style-type: none"><li>- Low toxic preservative without heavy metals</li><li>- Effective for pH more 8</li></ul>
DIPR 500	Hydro alcohol	- Water based color, resin, emulsi on paint	<ul style="list-style-type: none"><li>- No heavy metals contained</li><li>- Effective for pH more 8</li><li>- Safe sterilizing effect. no bad odor.</li></ul>
DIPR 350	CMIT & others	- Water based color, resin, emulsi on paint	<ul style="list-style-type: none"><li>- Low toxic preservative without heavy metals</li><li>- Excellent sterilizing performance</li><li>- Effective for pH 4~7, no bad odor</li></ul>

## 5. Product list of wetting agent

Product Name	Type	Application	Feature
DIWA 660	Non-ionic 100%	- Water based paint, ink, adhesive, UV paint	- Modified silicon surfactant, polyether, water based coatings - Good effect decreasing surface tension, give excellent wetting property
DIWA 610	Non-ionic 100%	- Water based paint, ink, - Paper coating paint, latex	- Good effect decreasing surface tension - Improve wetting ability and leveling property or paint and emulsion
DIWA 670	Non-ionic 100%	- Water based paint and ink	- High performance wetting agent for wide range of pH - Low foaming wetting agent - Good wetting, leveling property - No craters, Improve workability and storability



## 6. UV monomers

Product Name	Description	Func.	Color (GARDNER)	Solid (%)	Viscosity (at 25°C)	Mw	Characteristics
DIUM 200 (HDDA)	Hexanediol Diacrylate	2	≤1	100	5~15	226	Good adhesion Low volatility Fast curing
DIUM 300 (TMPTA)	TrimethylolPropane Triacrylate	3	≤1	100	80~120	296	Good abrasion resistance Low volatility Fast curing
DIUM 400 (PETA)	Pentaerythritol Triacrylate	3~4	≤1	100	<1,000	298	Very fast cure response when exposed to Ultraviolet or electron beam.
DIUM 460 (DPHA)	Dipentaerythritol Hexaacrylate	5~6	≤2	100	5,000~9,000	540	High density of Acrylate make high surface-hardness and high curing velocity, low odor, low skin irritancy
DIUM 500 (DPPA)	Dipentaerythritol Pentaacrylate	5~6	≤1	100	5,000~9,000	524	High density of Acrylate make high surface-hardness and high curing velocity, low odor, low skin irritancy

## 6. UV functional acrylate oligomer

Product Name	NV	Viscosity (cPs, 25 °C)	Func.	Characteristics
DIAOH 800	65 ± 2 (HDDA)	(25°C) 1,400	2	Good flexibility , good adhesive performance, Non-yellowing, High solvent resistance
DIAO 800	100	(40°C) 13,600	2	Good flexibility , good adhesive performance, Non-yellowing, High solvent resistance
DIAOF 830	70 ± 2	300	3	Low viscosity & flexibility, Outstanding toughness & stain resistance, Non-yellowing
DIAO 830	100	8,000	3	Good flexibility , toughness and exterior durability Very low viscosity coatings
DIAOT 830	100	70,000	2	Good abrasion resistance, Good flexibility & heat resistance, Exterior durability, Excellent toughness, Adhesion to various substrate, Non-yellowing
DIAOT 856	80 ± 2	780	6	High hardness & scratch resistance, High solvent resistance, High gloss, Extremely fast cure speed, Non-yellowing
DIAOT 859	100	20,000	6	High hardness & scratch resistance, High solvent resistance, High gloss, Extremely fast cure speed, , Non-yellowing
DIAOT 960	75 ± 2	2,500	9	High hardness & excellent abrasion resistance, High scratch & solvent resistance, Good toughness & gloss, Non-yellowing
DIAOT 906	100	50,000	10	Very high hardness & excellent scratch resistance, Excellent chemical resistance, Extremely fast cure speed, Non-yellowing

# Thank you



**J&C Global Tech. Co., Ltd.**

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