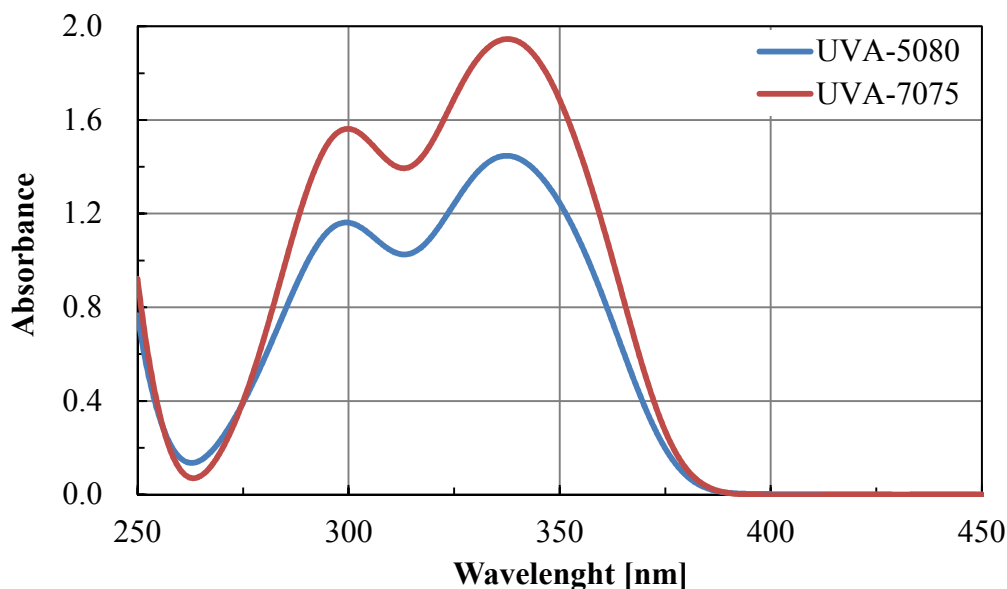


## Ultraviolet absorption polymers

### Solvent-Based polymers / Standard type

Chemical structure	<p style="text-align: center;"> <math>a+b=100w\%</math>  <math>b=50w\%</math> </p>		<p style="text-align: center;"> <math>a+b=100w\%</math>  <math>b=70w\%</math> </p>	
Product name	<b>VANARESIN UVA-5080</b>	<b>VANARESIN UVA-55T</b>	<b>VANARESIN UVA-7075</b>	<b>VANARESIN UVA-73T</b>
External appearance	Yellow viscous liquid	Yellow viscous liquid	Yellow viscous liquid	Yellow viscous liquid
Main component	Methacrylic copolymer	Methacrylic copolymer	Methacrylic copolymer	Methacrylic copolymer
Polymer CAS RN	Listed	Listed	Listed	Listed
Polymer Tg (calculation value)	+80°C	+80°C	+75°C	+75°C
UVA content in the polymer ( Dry )	50w%	50w%	70w%	70w%
Molecular weight (Mw)	40,000~60,000	100,000~150,000	30,000~50,000	80,000~120,000
Solids content (%)	41±2	41±2	41±2	41±2
Viscosity (mPa · s/25°C)	200~1000	200~1000	100~500	200~1,000
Solvent	Ethyl acetate	Methyl ethyl ketone Toluene	Ethyl acetate Toluene	Methyl ethyl ketone Toluene

This product is a prototype. The numerical value is a representative value.



UV absorption spectrum  
 《 40ppm chloroform solution cell 1cm 》

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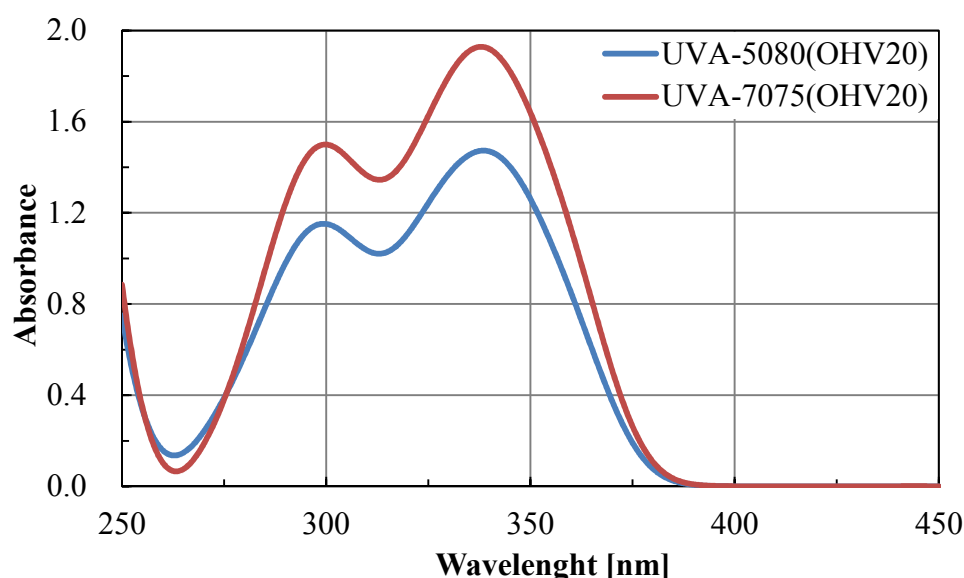
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## Ultraviolet absorption polymers

### Solvent-Based polymers / Hydroxyl introduction type

Chemical structure	<p> <math>a+b+c=100w\%</math>  <math>c=50w\%</math> </p>	<p> <math>a+b=100w\%</math>  <math>b=50w\%</math> </p>	<p> <math>a+b=100w\%</math>  <math>b=50w\%</math> </p>
Product name	<b>VANARESIN UVA-5080(OHV20)</b>	<b>VANARESIN UVA-7075(OHV20)</b>	<b>VANARESIN UVA-55MHB</b>
External appearance	Yellow viscous liquid	Yellow viscous liquid	Yellow viscous liquid
Main component	Methacrylic copolymer	Methacrylic copolymer	Methacrylic copolymer
Polymer CAS RN	Listed	Listed	Listed
Polymer Tg (calculation value)	+80°C	+75°C	+60°C
UVA content in the polymer (Dry)	50w%	70w%	50w%
Molecular weight (Mw)	40,000~60,000	30,000~50,000	40,000~60,000
Solids content (%)	41±2	41±2	41±2
Viscosity (mPa · s/25°C)	200~1000	100~500	100~500
Hydroxyl value (excluding phenol)	20mgKOH/g	20mgKOH/g	216mgKOH/g
Solvent	Ethyl acetate	Ethyl acetate Toluene	Methyl ethyl ketone 2-propanol

This product is a prototype. The numerical value is a representative value.



UV absorption spectrum

《 40ppm chloroform solution cell 1cm 》

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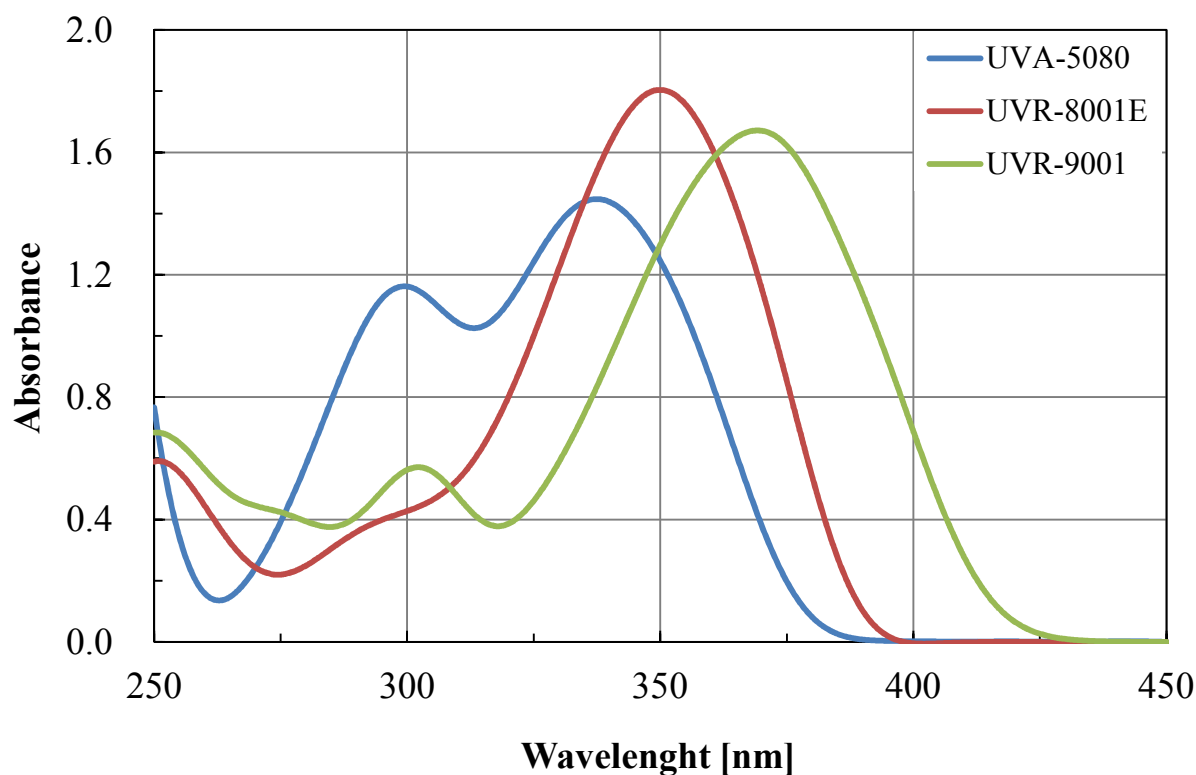
## Ultraviolet absorption polymers

### Solvent-Based polymers /

#### New development products containing absorption performance of long-wavelength UV rays

	long-wavelength UVA Type 1	long-wavelength UVA Type 2
Product name	<b>VANARESIN UVR-8001E</b>	<b>VANARESIN UVR-9001</b>
External appearance	Yellow liquid	Yellow viscous liquid
Main component	Methacrylic copolymer	Methacrylic copolymer
Polymer CAS RN	Unlisted	Unlisted
UVA content in the polymer (Dry)	50w%	50w%
Molecular weight (Mw)	35,000~45,000	15,000~25,000
Solids content (%)	35.0±2	36.0±2
Viscosity (mPa · s/25°C)	50~500	≤200
Solvent	Ethyl acetate	Methyl ethyl ketone Toluene

This product is a prototype. The numerical value is a representative value.



UV absorption spectrum

《 40ppm chloroform solution cell 1cm 》

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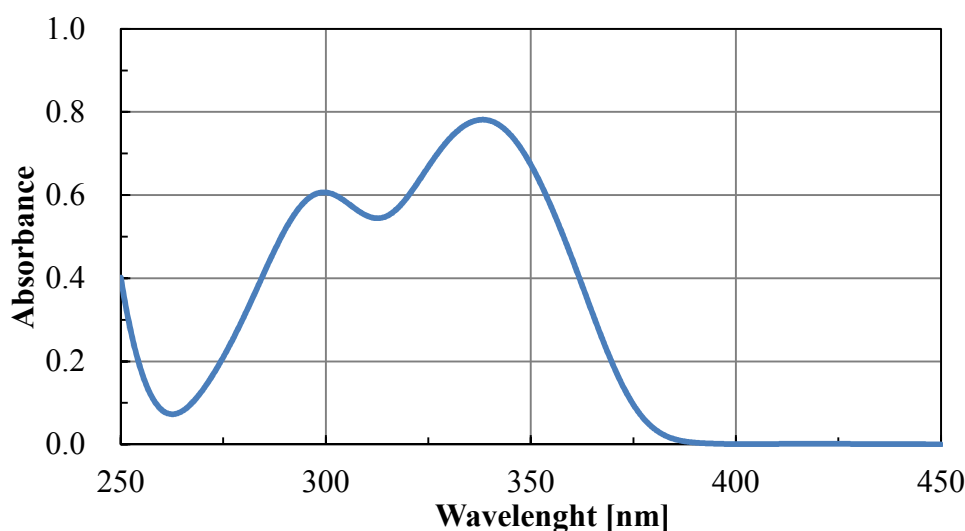
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## Ultraviolet absorption polymers

### Emulsion type

Chemical structure	<p style="text-align: center;"><math>a+b+c+d+e+f=100w\%</math> <math>f=10w\%</math></p>			
Product name	<b>NEWCOAT UVA-101</b>	<b>NEWCOAT UVA-102</b>	<b>NEWCOAT UVA-103</b>	<b>NEWCOAT UVA-104</b>
External Appearance	Milky white o/w emulsion	Milky white o/w emulsion	Milky white o/w emulsion	Milky white o/w emulsion
Main component	(Meth)acrylic copolymer	(Meth)acrylic copolymer	(Meth)acrylic copolymer	(Meth)acrylic copolymer
Polymer CAS RN	Listed	Listed	Listed	Listed
Polymer Tg (calculation value)	<b>0°C</b>	<b>-10°C</b>	<b>-20°C</b>	<b>-30°C</b>
UVA content in the polymer (Dry)	<b>10w%</b>	<b>10w%</b>	<b>10w%</b>	<b>10w%</b>
pH	8.5±1	8.5±1	8.5±1	8.5±1
Ionicity	Anionic	Anionic	Anionic	Anionic
Solids content	45.5±1	45.5±1	45.5±1	45.5±1
Viscosity (mPa · s/25°C)	≤500	≤500	≤500	≤500
Hydroxyl value (excluding phenol)	47mgKOH/g	47mgKOH/g	47mgKOH/g	47mgKOH/g
Solvent	Water	Water	Water	Water

The numerical value is a representative value.



UV absorption spectrum

《 100ppm chloroform solution cell 1cm 》

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