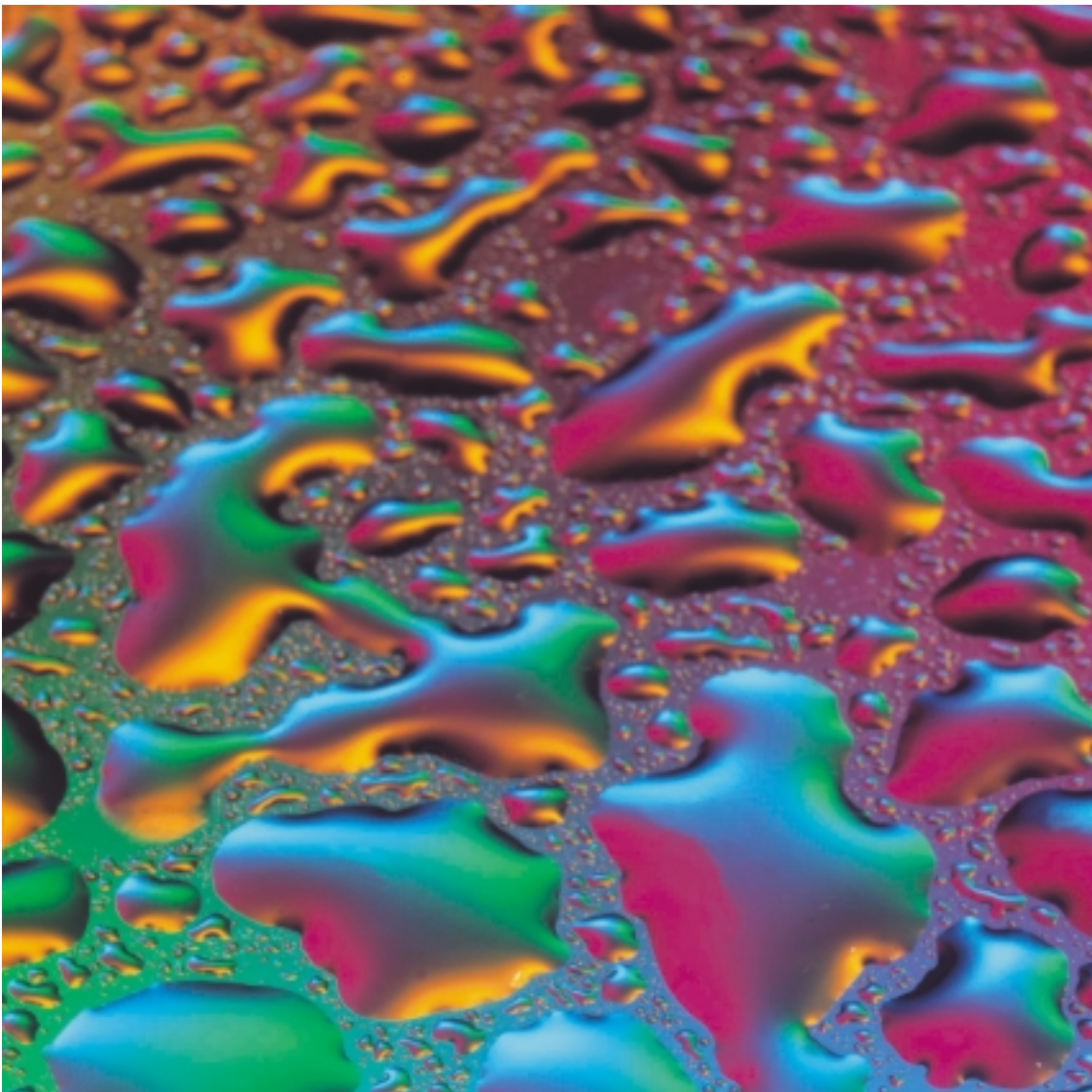


**CRAY VALLEY**

**CRAYVALLAC®  
SURFACE MODIFIERS**



**WAXES  
PRODUCT GUIDE**

# ABOUT US

**CRAY VALLEY** has been manufacturing the **CRAYVALLAC®** range of additives since the 1960's and has become a major producer of additives.

Today these **CRAYVALLAC®** additives are stocked and sold in more than **100 countries** around the World.

The production of these high performance additives is located at our purpose-built world class manufacturing facility in **Drocourt, Northern France** – where high levels of automation and control have been integrated to ensure the **highest quality** standards available.

With a dedicated central research & development team based at our corporate technical headquarters in France, our commitment to product development is ongoing.

The **CRAYVALLAC®** product line is further supported by regional technical teams based at our local laboratories in the **USA, Europe and Asia** to assist customers in their local markets.

**CRAY VALLEY** is a leading resin manufacturer and supplier- with some **50 manufacturing sites** located across the World – supplying numerous technologies into a wide range of markets – with sales approaching **\$2 billion** dollars.

Over the last few years, **CRAY VALLEY's** high level of technical commitment and its vast **experience in the field of coating technology** have facilitated the introduction of many new **CRAYVALLAC®** additives for use in a wide range of markets & applications.

The **CRAYVALLAC®** trademark covers a number of exciting and growing additive product lines including: **rheological additives, flow & levelling and surface modifiers.**

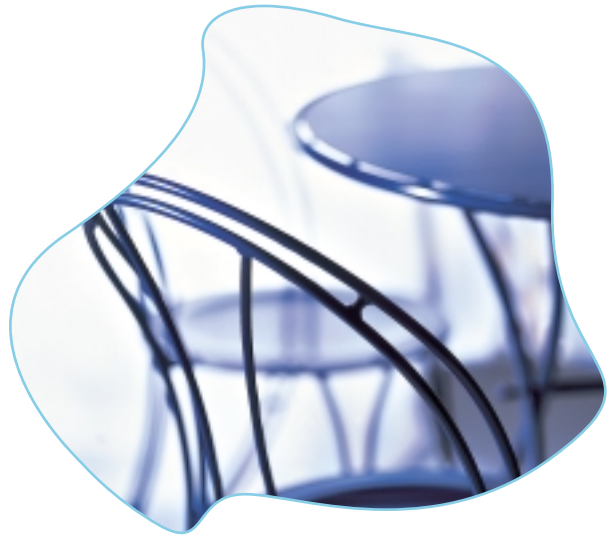
For more information regarding **CRAYVALLAC®** additive activities, please visit our website at [www.crayvallac.com](http://www.crayvallac.com) or contact your local **CRAY VALLEY** representative.



# CRAYVALLAC® SURFACE MODIFIERS

## USED IN...

- ★ CAN COATINGS
- ★ COIL COATINGS
- ★ GENERAL INDUSTRY
- ★ WOOD COATINGS
- ★ POWDER COATINGS
- ★ UV CURING SYSTEMS
- ★ ADHESIVES
- ★ INKS
- ★ OVERPRINT VARNISHES
- ★ AUTOMOTIVE COATINGS
- ★ PLASTICS
- ★ LUBRICANTS
- ★ COSMETICS
- ★ LEATHER AND TEXTILE
- ★ ETC...



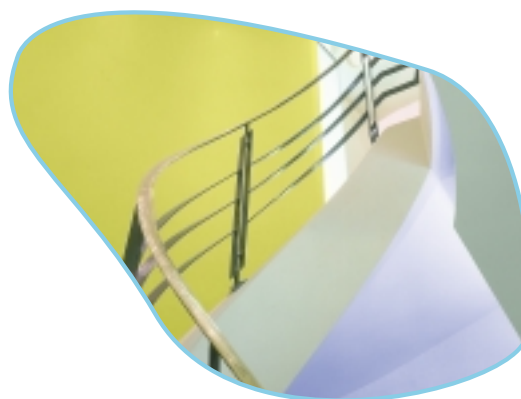
## ENHANCING...

- ★ MATTING EFFECT
- ★ TEXTURED FINISH
- ★ ANTI BLOCKING
- ★ SLIP CONTROL
- ★ MAR RESISTANCE
- ★ RUB AND ABRASION RESISTANCE
- ★ SCRATCH RESISTANCE
- ★ UV RESISTANCE
- ★ HEAT RESISTANCE
- ★ SOLVENT RESISTANCE
- ★ WATER RESISTANCE AND WATER REPELLENCY
- ★ SANDABILITY
- ★ ANTI-SETTLE
- ★ DEGASSING
- ★ LUBRICITY
- ★ SILKY FEEL
- ★ ETC...

CRAYVALLAC	TYPE*	SPECIFIC GRAVITY	DROP POINT °C (°F)	AVERAGE PARTICLE SIZE (µm)**	MAX PARTICLE SIZE (µm)**	FEATURES/APPLICATIONS
WN-1220	PE	0.94	110 (230)	5,5	30	Enhances slip. Improves rub, abrasion and scratch resistance with good anti-blocking, matting effect and hardness. Used in industrial wood finishing, powder and industrial coatings, can and coil, inks and overprint varnishes.
WN-1442	FT	0.94	112 (234)	6.0	30	Cost effective, for use in all types of coatings for rub, mar and scratch resistance, anti-blocking and slip.
WN-1495	FT	0.94	112 (234)	4,5	20	Versatile, with a fine particle size. For printing inks, powder, can and coil coatings to improve slip, anti-blocking and mar and rub resistance.
WN-2000	PE	0.96	118 (244)	6.0	30	High melting point, tough, with a fine particle size. Exceptional rub, mar, solvent and heat resistance. For use in solvent and water based printing inks. Minimum effect on gloss.
WN-2789	PE	0.95	85 (185)	Prills	-	Low melting point non-polar material for powder coatings to improve rub and scratch resistance. Also has good degassing properties.
WN-2950	PE	0.96	130 (266)	6.0	30	Higher melting point wax with exceptional hardness, heat and solvent resistance. Suited to demanding applications in both inks and coatings.
WN-3025	FT	0.95	118 (244)	5.0	25	High performance with price economy. Exceptional rub and mar resistance and slip properties in printings inks, overprint varnishes, coil and can coatings.

\* PE : Polyethylene  
 FT : Fischer-Tropsch

\*\* When comparing particle size, it is essential to use the same analytical technique and express the results using the same units.



CRAYVALLAC	TYPE*	SPECIFIC GRAVITY	DROP POINT °C (°F)	AVERAGE PARTICLE SIZE (µm)**	MAX PARTICLE SIZE (µm)**	FEATURES/APPLICATIONS
WN-1135	Modified PP	0.93	151 (304)	5.5	26	Matting agent in wood, powder, leather and general industrial coatings. At lower levels (0.5-1.5%) improves slip and anti-blocking, rub and water resistance in printing inks and coatings.
WN-1265	Modified Amide	0.99	146 (295)	5.5	30	Improves sandability in wood finishes. Avoids blooming in acid cured systems. Increases slip and mar resistance in industrial coatings. Improves degassing, dispersion, flow and levelling properties in powder coatings. No effect on Tg. Particularly recommended for PRIMID systems.
WN-1875	X-linked	1.35	>200 (>390)	6.0	30	Cross linked product with high melting point and heat resistance. Improves matting and mar resistance. Assists UV resistance and non chalking.

\* PP : Polypropylene

\*\* When comparing particle size, it is essential to use the same analytical technique and express the results using the same units.

## PARTICLE SIZE REDUCTION

Surface modifier waxes are usually milled into fine powders to aid their incorporation into coatings. The fineness of these powders is dependent upon their final applications. In general, the average particle size should be similar to the thickness of the final coating. This represents a range of average particle sizes from a couple of microns up to several hundred microns in certain applications. The process of preparing fine powders is referred to as micronisation and this is generally achieved by one of two methods:

- **Spraying:** The molten wax is forced through a spray nozzle and the resulting mist of solidified wax is collected. The particle size distribution is determined by several variables e.g. nozzle size and pressure.

- **Air Jet Milling:** The wax is fractured into small particles due to the action of opposing air jets. The material is trapped within this attrition zone until the particles are small enough to exit from the mill via a classifier. The particle size distribution is largely determined by the design of the classifier and its operating speed.



Cray Valley utilizes both the spray and jet mill technologies. This “state of the art” equipment is constantly monitored to ensure that our product particle size specifications are strictly adhered to. This particle size distribution is closely monitored using modern air and liquid dispersion laser diffractometers supported by conventional gravimetric sieve analysis.

# PTFE MODIFIED MICRONISED WAXES

CRAYVALLAC	TYPE*	SPECIFIC GRAVITY	DROP POINT °C (°F)	AVERAGE PARTICLE SIZE (µm)**	MAX PARTICLE SIZE (µm)**	FEATURES/APPLICATIONS
WF-1000	PTFE	2.15	325 (617)	7.5	30	PTFE wax for the lowest coefficient of friction. Can be used alone or in combination with other waxes to control abrasion, rub, mar and temperature resistance.
WF-1039	PTFE/PE	1.03	113 (235)	5.0	80	Designed specially for use in powder coatings to give textured finishes in polyester and epoxy polyester systems etc. Addition levels 0.5-1.5%.
WF-3200	PTFE/PE	1.02	112 (234)	5.0	20	Versatile, economical wax with fine particle size, high slip and lubricity. Improves anti-blocking, abrasion, mar resistance and surface hardness.
WF-3250	PTFE/PE	1.02	112 (234)	6.0	30	Highly cost effective and tough, with a low coefficient of friction for excellent slip, and abrasion resistance particularly suited to printing inks and powder coatings.
WF-3290	PTFE/PE	1.03	130 (266)	6.0	30	A hard wax with high lubricity and exceptional resistance to solvent, abrasion, mar and rub. Ideal for can and coil coatings, industrial coatings and printing inks.
WF-6010	PTFE/PE	1.07	112 (234)	5.0	25	Similar to WF-3200 but gives higher lubricity, blocking and abrasion resistance. Suitable where more demanding technical properties are required.
WF-9200	PTFE/PE	1.07	130 (266)	7.5	30	Designed for water-based systems. Easy to disperse. Excellent slip, anti-blocking and anti-abrasion properties for inks, overprint varnishes and industrial coatings.
WF-9710	PTFE/PE	1.32	113 (235)	6.0	30	High PTFE content for maximum lubricity. Exceptional slip, scuff and scratch resistance. Gives high heat resistance hence suitable in heat seal applications.

\* PTFE : Polytetrafluoroethylene  
PE : Polyethylene

\*\* When comparing particle size, it is essential to use the same analytical technique and express the results using the same units.

# AQUEOUS WAX DISPERSIONS

CRAYVALLAC	TYPE*	SPECIFIC GRAVITY	DROP POINT °C (°F)	AVERAGE PARTICLE SIZE (µm)**	SOLID CONTENT (%)	FEATURES/APPLICATIONS
WW-1001	PE	1.00	112 (234)	6.0	40	Excellent stability. PE wax gives high slip, abrasion and rub resistance in water-based inks and coatings. Good compatibility and rapid dispersion.
WW-1074	PE	1.01	125 (257)	7.0	40	High slip, abrasion and rub resistance and improved matting. Wide compatibility in water-based inks, overlacquers, can, coil and general coatings.
WW-1077	PTFE/PE	1.01	112 (234)	6.0	50	Gives exceptional slip, scuff and rub resistance for demanding applications. Wide compatibility and excellent stability in water-based inks, overlacquers, can, coil and general coatings.
WW-1326	PE emulsion	1.00	127 (260)	<1	42	Water based wax emulsion for printing inks and lacquers. Hard PE with good compatibility and low emulsifier level.
WW-2270	PE	0.97	137 (278)	12.0	20	Hard, high melting wax for demanding water-based applications such as can coatings. Stable and robust dispersion.
WW-9500	PP	1.00	151 (304)	6.0	35	Used as matting agent in wood, industrial and leather coatings. Improves mar, rub and water resistance as well as slip and anti-blocking.
WW-9790	PTFE/PE	1.01	125 (257)	7.0	25	Exceptional slip, abrasion and rub resistance. Low viscosity aids dispersibility. Formulated for water-based inks, can and coil coatings.

\* PP : Polypropylene  
 PTFE : Polytetrafluoroethylene  
 PE : Polyethylene

\*\* When comparing particle size, it is essential to use the same analytical technique and express the results using the same units.

## REGULATORY LISTS, TOXICOLOGY AND LEGISLATION

Please refer to our corresponding Product Technical Data Sheet and Product Safety Data Sheet (both respectively available on [www.crayvallac.com](http://www.crayvallac.com) and [www.crayvalley.com](http://www.crayvalley.com)). For further information concerning the regulatory status (such as TSCA, EINECS, FDA...) of our products or for support in the case of specific requests, please do not hesitate to contact us.

# CRAYVALLAC®

## ISOPROPANOL WAX DISPERSIONS

CRAYVALLAC	TYPE*	SPECIFIC GRAVITY	DROP POINT °C (°F)	AVERAGE PARTICLE SIZE (µm)**	SOLID CONTENT (%)	FEATURES/APPLICATIONS
WS-1147	PTFE/PE	0.88	149 (300)	6.5	40	Gives exceptional slip, scuff, rub and heat resistance for more demanding applications. Excellent stability and resistance to settlement in inks, overlacquers, can and coil coatings. Dust free with rapid dispersion.
WS-4700	PE	0.85	112 (234)	5.5	40	Excellent stability. Compatible with a wide range of systems. The PE wax gives high slip, abrasion and rub resistance to inks and coatings. Facilitates dispersion.

# CRAYVALLAC®

## BUTYL ACETATE WAX DISPERSIONS

CRAYVALLAC	TYPE*	SPECIFIC GRAVITY	DROP POINT °C (°F)	AVERAGE PARTICLE SIZE (µm)**	SOLID CONTENT (%)	FEATURES/APPLICATIONS
WS-8050	PE	0.90	118 (244)	5.0	40	Improves slip, abrasion and rub resistance in a wide range of coatings. Helps to retard pigment settlement.
WS-8200	PTFE/PE	0.92	118 (244)	5.0	40	High levels of heat, slip, abrasion, scratch and rub resistance.

\* PE : Polyethylene  
PTFE : Polytetrafluoroethylene

\*\* When comparing particle size, it is essential to use the same analytical technique and express the results using the same units.

### INCORPORATION METHODS

Powder waxes are readily dispersed into coating formulations using a variety of techniques e.g. high-speed dispersers, bead mills and triple roll mills. In general, micronised waxes are best incorporated into coating systems by pre-mixing with the binder. Alternatively, powder waxes may be added to the formulation immediately following the dispersion stage but prior to the final letdown.

The use of pre-dispersed waxes such as our WW or WS dispersions, avoids the inconveniences commonly associated with micronised powders. Dispersions, by nature, are easier and more efficient to incorporate as they require less intensive processing.

# CRAYVALLAC®

## SELECTION BY APPLICATIONS

Cray Valley's Surface Modifiers:		CRAYVALLAC® Range	Inks	Coil Coatings	Can Coatings	Wood Finishing	Powder Coatings	Metal Packaging	Industrial Coatings	Overprint Varnishes	UV Coatings	Heat-Seal Applications	
Micronised Powders	PP	WN-1135 *	•	•	•	•	•	•	•	•	•	•	
	EBS	WN-1265 **	•	•	•	•	•	•	•	•	•	•	
	Polyethylene	WN-1220	•	•	•	•	•	•	•	•	•	•	•
		WN-1442	•	•	•	•	•	•	•	•	•	•	•
		WN-1495	•	•	•	•	•	•	•	•	•	•	•
		WN-2000	•	•	•	•	•	•	•	•	•	•	•
		WN-2789	•	•	•	•	•	•	•	•	•	•	•
		WN-2950	•	•	•	•	•	•	•	•	•	•	•
		WN-3025	•	•	•	•	•	•	•	•	•	•	•
	X-linked	WN-1875 ***	•	•	•	•	•	•	•	•	•	•	•
	PTFE Modified Polyethylene	PTFE	WF-1000	•	•	•	•	•	•	•	•	•	•
		WF-1039	•	•	•	•	•	•	•	•	•	•	•
		WF-3200	•	•	•	•	•	•	•	•	•	•	•
		WF-3250	•	•	•	•	•	•	•	•	•	•	•
		WF-3290	•	•	•	•	•	•	•	•	•	•	•
		WF-6010	•	•	•	•	•	•	•	•	•	•	•
		WF-9200	•	•	•	•	•	•	•	•	•	•	•
WF-9710	•	•	•	•	•	•	•	•	•	•	•		
Wax Dispersions	Water-Based	WW-1001	•	•	•	•	•	•	•	•	•	•	
		WW-1074	•	•	•	•	•	•	•	•	•	•	
		WW-1077	•	•	•	•	•	•	•	•	•	•	
		WW-1326	•	•	•	•	•	•	•	•	•	•	
		WW-2270	•	•	•	•	•	•	•	•	•	•	
		WW-9500	•	•	•	•	•	•	•	•	•	•	
		WW-9790	•	•	•	•	•	•	•	•	•	•	
	Solvent-Based	WS-1147	•	•	•	•	•	•	•	•	•	•	•
		WS-4700	•	•	•	•	•	•	•	•	•	•	•
		WS-8050	•	•	•	•	•	•	•	•	•	•	•
WS-8200	•	•	•	•	•	•	•	•	•	•	•		

- Highly recommended
- Suitable
- Not recommended

\* WN-1135 is a special modified polypropylene

\*\* WN-1265 is a special EBS grade

\*\*\* WN-1875 is a high melting point cross-linked polymer

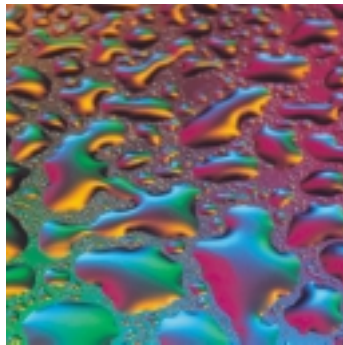
# CRAYVALLAC® SELECTION BY PROPERTIES

Cray Valley's Surface Modifiers:		CRAYVALLAC® Range	Matting	Textured Finish	Anti-blocking	Slip	Mar Resistance	Rub and Abrasion Resistance	Scratch Resistance	UV Resistance	Heat Resistance	Solvent Resistance	Water Resistance	Sandability	Anti-settle	Degassing	
Micronised Powders	PP	WN-1135 *	●●	•	●●	●	●	●●	●●	•	●●	•	●●	•	●●	•	
	EBS	WN-1265 **	•	•	•	●	●	•	•	•	•	•	•	●●●	●	•	
	Polyethylene	WN-1220	●●	•	●●	●	●	•	●	•	•	•	•	•	•	•	●
		WN-1442	●	•	●	●●	●●	●●	●●	●●	•	•	●	●	•	•	●
		WN-1495	●	•	●	●●	●●	●●	●●	●●	•	•	●	●	•	•	●
		WN-2000	•	•	●	●●	●●	●●	●●	●●	•	•	●	●	•	●●	●●
		WN-2789	•	•	●	●	●●	●●	●●	●●	•	●●	●●	●	•	•	●●
		WN-2950	•	•	•	●	●	●●	●●	●●	•	•	•	•	•	•	●●
		WN-3025	•	•	●●	●	●●	●●	●●	●●	•	●●	●●	●	•	•	•
	X-linked	WN-1875 ***	•	•	●	●●	●●	●●	●●	•	●	●●	●	•	•	•	
	PTFE	WF-1000	●●	•	•	•	●	•	•	●●	●●	•	•	•	•	•	
	PTFE Modified Polyethylene	WF-1039	•	•	•	●●●	●	•	•	•	●●	•	•	•	•	•	
		WF-3200	•	●●	•	●	●	•	•	•	•	•	•	•	•	•	
		WF-3250	•	•	●	●●	●	•	●	•	•	•	•	•	•	•	●●
		WF-3290	•	•	●	●●	●	•	●	•	•	•	•	•	•	•	●●
		WF-6010	•	•	●	●●	●●	●●	●●	●●	•	●	●	•	•	•	•
		WF-9200	•	•	●	●●●	●●	●●	●●	●●●	•	●	•	•	•	•	•
WF-9710	•	•	●●	●●●	●●	●●	●●●	•	•	•	•	•	•	•	•		
Wax Dispersions	Water-Based	WW-1001	•	•	•	●●●	●●	●●	●●●	•	●●	•	•	•	•	•	
		WW-1074	•	•	•	●●	●	●●	●	•	•	•	●	•	●●	•	
		WW-1077	•	•	•	●●	●	●●	●	•	•	•	●	•	●●	•	
		WW-1326	•	•	•	●●	●	●●	●	•	•	•	●	•	●●	•	
		WW-2270	•	•	•	●	●	●	●	•	•	•	•	•	•	•	
		WW-9500	•	•	•	●	●	●	●	•	•	•	•	•	•	•	
	WW-9790	●●	•	●●	●	●	●●	●●	•	●●	•	•	•	•	●●	•	
	Solvent-Based	WS-1147	•	•	•	●●	●	●●	●	•	●	•	•	•	•	•	
		WS-4700	•	•	•	●●●	●●	●●	●●	•	●●	•	•	•	•	●●	•
		WS-8050	•	•	•	●●	●	●●	●	•	•	•	•	•	•	●●	•
WS-8200		•	•	●	●●	●●	●●	●●	●●	•	•	●	●	•	●●	•	

- Excellent
- Very good
- Good
- Not recommended

\* WN-1135 is a special modified polypropylene  
 \*\* WN-1265 is a special EBS grade  
 \*\*\* WN-1875 is a high melting point cross-linked polymer





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