



**SHOWA DENKO CHLOROPRENE™**  
Polychloroprene Rubber

- Grade Selection Guide -

## CHARACTERISTICS OF G / W / T TYPES

		Sulfur Modified	Non-Sulfur Modified	
		G type	W type	T type
	Raw Polymer Stability	Less stable than W/T types	Very Stable	Very Stable
Processability	Milling Effect	Effective (special peptizer can be used)	Small	Small
	Tackiness	Sticky	Less sticky	Less sticky
	Mill Shrinkage	Very small when milling	Larger than G type	Less shrinkage
	Extrudability	Very smooth surface	Good collapse resistance	Very smooth surface with better collapse resistance
	Cure Rate	Curable without any accelerators	Variable depending on accelerators	Variable depending on accelerators
Physical Properties	Tensile Strength	Better than W/T types at higher rubber content	Better than G type when highly loaded	Better than G type when highly loaded
	Tear Strength	Better than W/T types	-	-
	Resilience	Larger than W/T types	-	-
	Elongation	Better than W/T types	-	-
	Compression Set Resistance	-	Better than G type at elevated temperature	Better than G type at elevated temperature
	Heat Resistance	-	Better than G type	Better than G type
	Flex Resistance	Better than W/T types	-	-
	Texture	Similar to NR	-	-
	Adhesion	Better adhesion to NR or SBR than W/T types	Good	Good
	Others	Little difference of weather, ozone and flame resistance among G, W, and T types.		
<b>Requirement / Application</b>	Hot tear strength Complicated-shape molded goods Tacky compound Lower compound viscosity Belting, Sponge(foam)	Heat resistance Compression set resistance General purpose and extrusion	Less shrinkage with collapse resistance Extruded goods, calendered sheet	

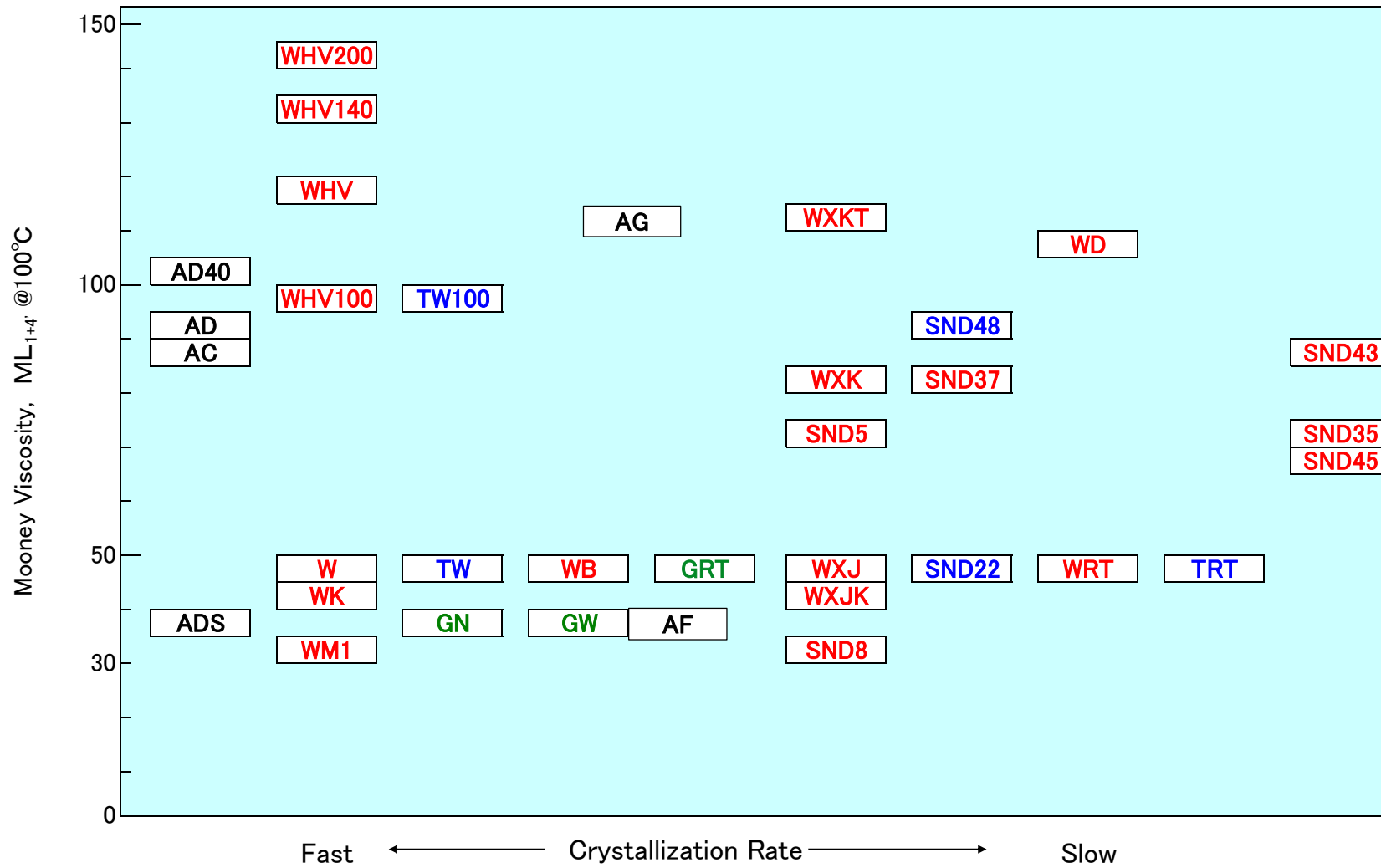
## DRY GRADES

### 1-1 GENERAL PURPOSE

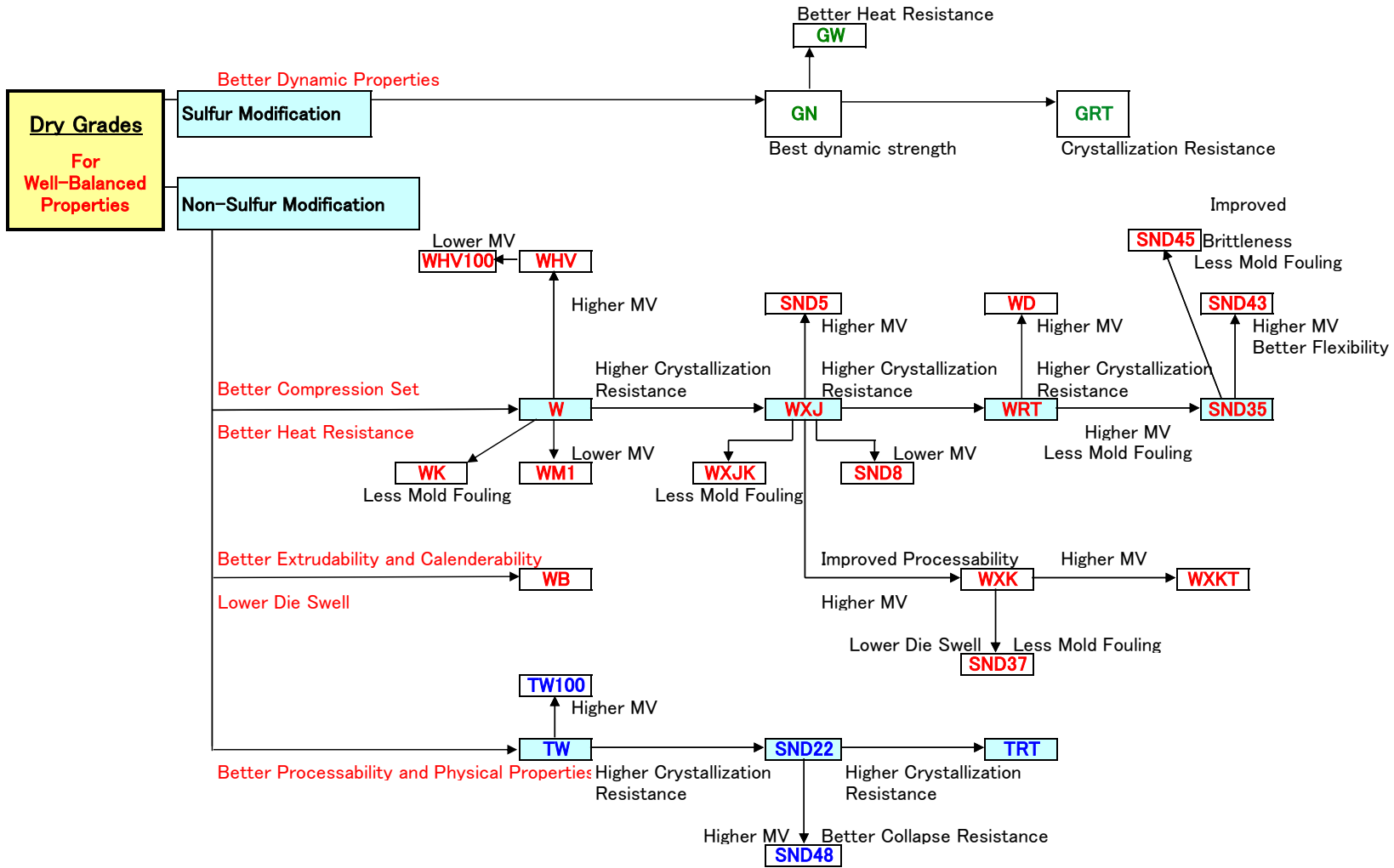
Grade	Mooney Viscosity [ML 1+4, 100°C]	Crystallization Rate	Other Characteristics
<b><u>G Types (Sulfur-modified Group)</u></b>			
GN	42–59	Medium	Non-staining, sulfur modified G type with best tear strength and flex resistance
GRT*	40–54	Slow	Good low temperature properties, G type with best tack for frictioning application
GW	37–49	Slow	Sulfur modified G type with better heat and compression set resistance than GN
<b><u>W Types (Basic Group)</u></b>			
W	42–51	Medium	Standard grade for general purpose
WM1*	34–41	Medium	Lower viscosity version of W
WHV	109–130	Medium	Higher viscosity version of W for high loading application and general adhesives
WHV100	95–105	Medium	Lower viscosity version of WHV
<b><u>W Types (Crystallization Resistant Group)</u></b>			
WXJ	42–51	Very Slow	Good low temperature properties for general use
SND5	67–76	Very Slow	Higher viscosity version of WXJ
SND8	32–37	Very Slow	Lower viscosity version of WXJ
WRT	42–51	Extremely slow	Excellent low temperature properties
WD	100–120	Extremely slow	Higher viscosity version of WRT, for high loading use
<b><u>W Types (Extrusion &amp; Calendering)</u></b>			
WB	42–51	Medium	Best extrusion and calendering properties
WXK	73–89	Very Slow	Good low temperature properties with better extrudability
WXKT	106–117	Very Slow	Higher viscosity version of WX-K for high loading use
SND37	73–89	Very Slow	Better extrusion version of WX-K with improved mold release
<b><u>W Types (Low Mold Fouling Group)</u></b>			
WK	42–51	Medium	Better mold release version of W with good mill-and flow-ability
WXJK	42–51	Very Slow	Improved mold release version of WXJ with good mill-ability
SND35	63–73	Extremely slow	More excellent low temperature properties of WRT with improved mold release for injection molding goods
SND43	78–88	Extremely slow	Higher viscosity version of SND-35 with less shrinkage
SND45	60–73	Extremely slow	More excellent low temp. and improved brittleness temp. version of WRT with improved mold release for injection molding
<b><u>T Types (Specific Group for Extrusion, Calendering)</u></b>			
TW	42–51	Medium	Superior extrusion and calendering grade with good tensile properties
TW100	85–102	Medium	Higher viscosity version of TW for high loading use
SND22	42–51	Very slow	Good low temperature properties with better extrudability
SND48	85–100	Very slow	Higher viscosity version of SND-22 with better calender-ability and extrusion-ability having collapse resistance
TRT	42–51	Extremely slow	Excellent low temperature properties with better processability

\*Please contact your regional account representative for supply availability

### PLOT OF DRY GRADES PER CRYSTALLIZATION RATE AND MOONEY VISCOSITY



# SELECTION GUIDE OF DRY GRADES



# ADHESIVE / LIQUID DISPERSION GRADES

## 1- 2 ADHESIVE APPLICATION

Grade	Mooney Viscosity [ML 1+4, 100°C]	Crystallization Rate	Form	Other Characteristics
<b>W Types</b>				
W	42 –51	Medium	Chip/Slice	Most common grade
WM1	34 –41	Medium	Chip	Lower viscosity version of W
WHV	109 –130	Medium	Slice	Higher viscosity version of W
WHV100	95 –105	Medium	Chip/Slice	Lower viscosity version of WHV
WHV140	86 –130 *	Medium	Slice	For high viscosity adhesive
WXJ	42 –51	Very slow	Chip	Soft film and high tack at low temperature
WRT	42 –51	Extremely slow	Chip	Extremely soft film and high tack at low temperature
<b>A Types</b>				
AC	31 –43*	Very fast	Chip	Adhesives and paints use with good breakdown properties
ADS	10–35*	Very fast	Slice	Low solution viscosity version of AD. Low VOC adhesive potential
AD	33–46*	Very fast	Slice	Adhesives and paints use with good solution viscosity stability
AD40	76–115*	Very fast	Slice	High solution viscosity version of AD
AF	45–115**	Slow	Chip	Excellent hot bond strength, carboxylated
AG	80-130	Medium-Slow	Slice	Excellent sprayability, thixotropic

\* Brookfield viscosity of 5% raw polymer solution in toluene at 25 °C, [mPas]

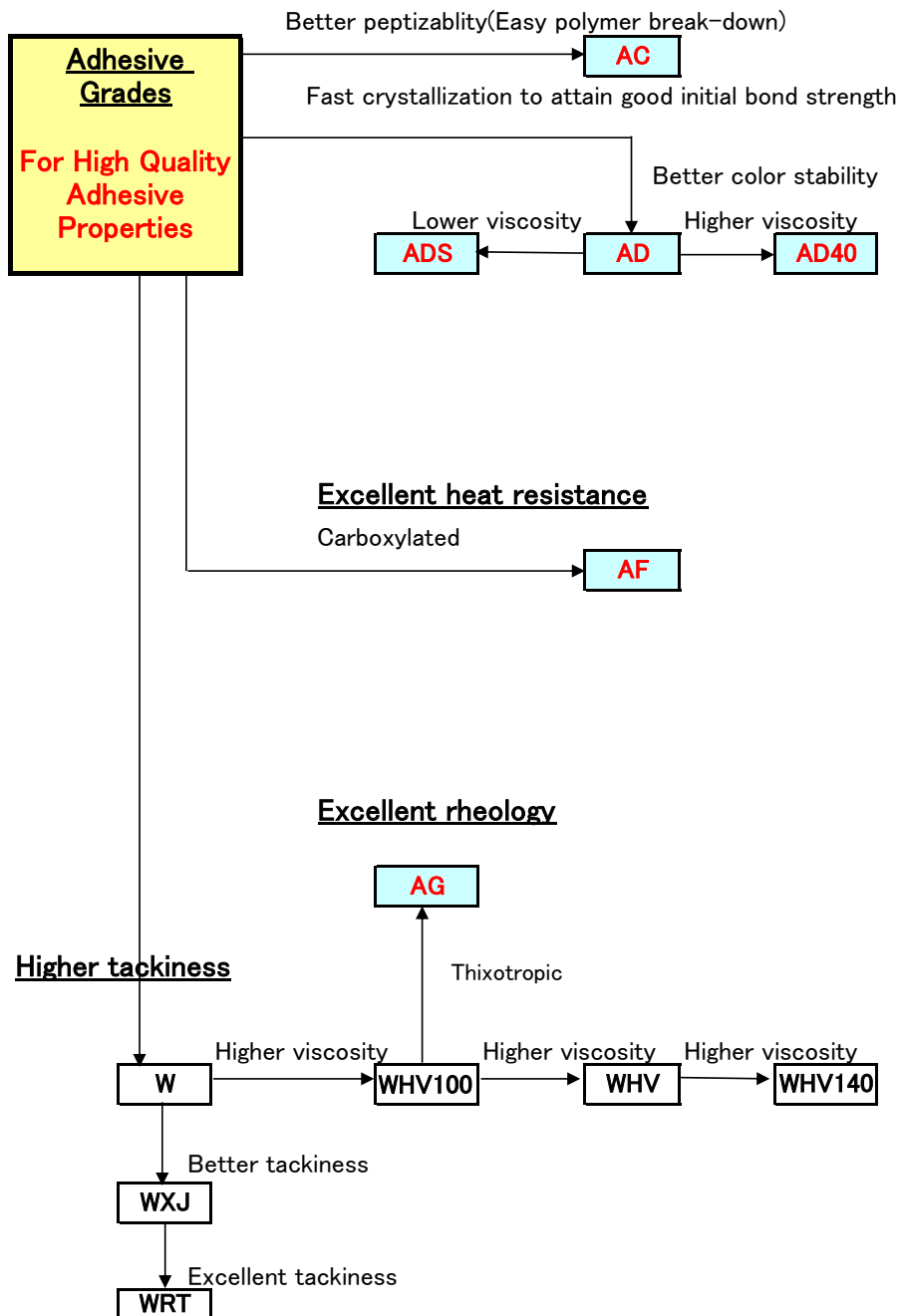
\*\* Brookfield viscosity of 10% raw polymer solution in toluene/hexane(60/40 vol/vol) at 25°C, [mPas]

## 1- 3 LIQUID DISPERSIONS

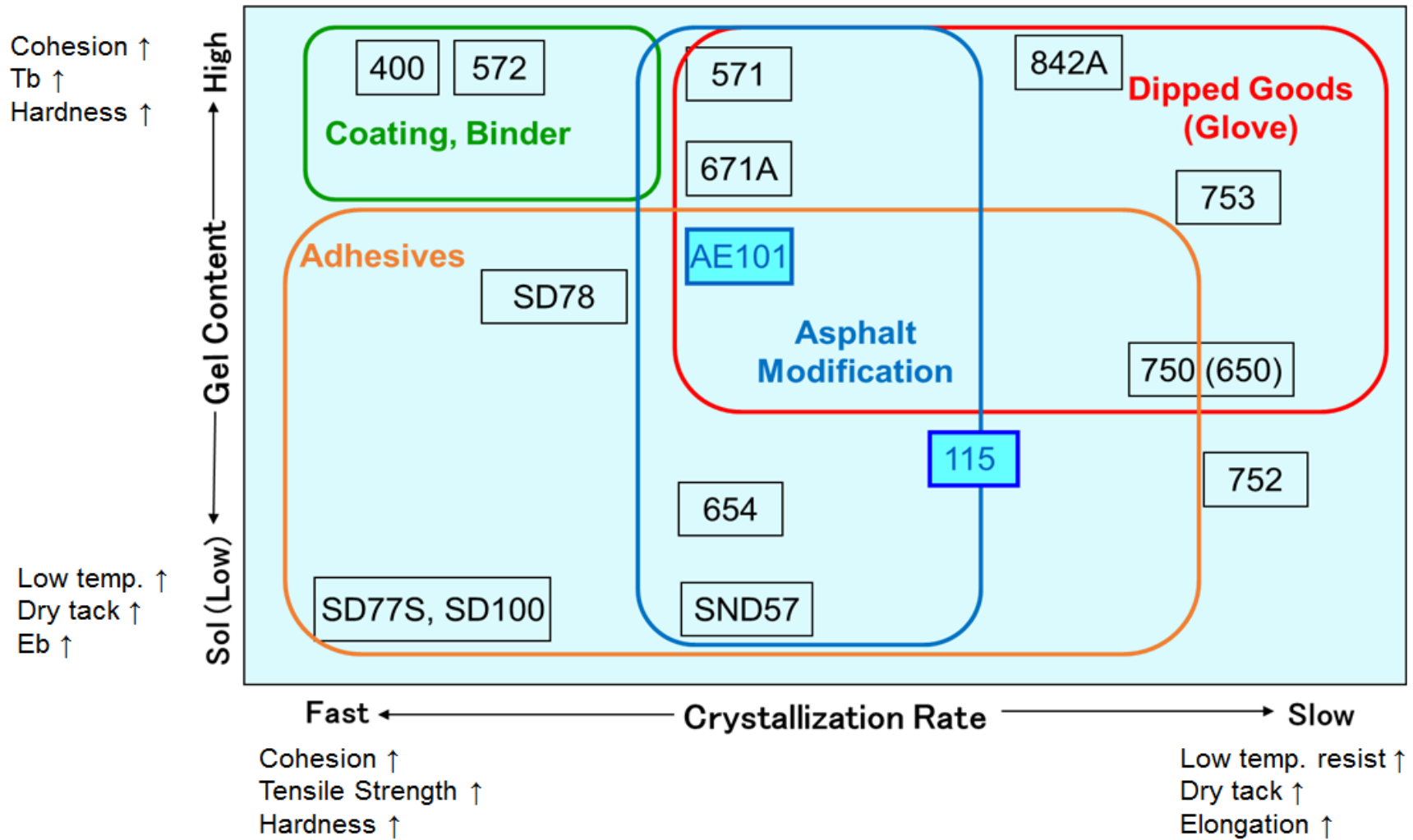
Grade	Polarity	Solid content (%)	Polymer Structure		Crystallization Rate	Other Characteristics
			Gel Content	Homo/Copolym.		
<b>400</b>	Anionic	50	Medium	Copolymer	Extremely fast	Ozone, Weatherability
<b>750</b>	Anionic	50	Medium	Copolymer	Extremely slow	Flex, excellent elasticity
<b>752</b>	Anionic	50	Medium	Copolymer	Extremely slow	Flex resistance elasticity (soft) very low modulus
<b>753</b>	Anionic	50	Medium	Copolymer	Extremely slow	Flex, excellent elasticity with accelerator-free
<b>650</b>	Anionic	60	Medium	Copolymer	Extremely slow	High solid version of LD750
<b>654</b>	Anionic	59	Low	Copolymer	Low	Low modulus
<b>842A</b>	Anionic	50	High	Homopolymer	Very slow	High cure rate
<b>671A</b>	Anionic	59	Med-High	Homopolymer	Medium-Slow	High wet gel strength
<b>AE101</b>	Non ionic	59	Med-High	Homopolymer	Medium-Slow	Colloidal stability at low pH
<b>572</b>	Anionic	50	High	Homopolymer	Fast	Quick Grab strength
<b>571</b>	Anionic	50	High	Homopolymer	Slow	General Purpose, High cure rate
<b>115</b>	Non ionic	47.5	Low	Copolymer	Slow	Carboxylated, Hot bond strength
<b>SD77S</b>	Anionic	55	Sol(No gel)	Homopolymer	Very fast	Quick break for foam bonding
<b>SD100</b>	Anionic	55	Sol(No gel)	Homopolymer	Very fast	Excellent Quick break for foam bonding
<b>SND57</b>	Anionic	58	Sol(No gel)	Homopolymer	Medium	Tackiness, very low MW
<b>SD78</b>	Anionic	60	Med-High	Copolymer	Fast-Medium	Wood High Pressure Laminate

# SELECTION GUIDE OF ADHESIVE GRADES

## Higher Initial Bond Generation



# LATEX APPLICATION MAP - GEL CONTENT VS. CRYSTALLIZATION RATE





**SHOWA DENKO CHLOROPRENE LIQUID DISPERSION PROPERTIES (Typical Values)**

Grades	400	750	752	753	650	654	842A	671A	572	571	SND57	SD77S	SD100	SD78	AE101	115
<b>Main Feature</b>	Ozone and weather resistance	Excellent flexibility				Low modulus	Fast curing	Good wet strength	Fast crystallizing	General purpose	Good tackiness	Water based adhesives for foam bonding	Water based adhesives for foam bonding	Water based adhesives for High Pressure Laminate	Non-ionic	Nonionic
<b>Solids Content,%</b>	50	50	50	50	60 same polymer as 750	59	50	59	50	50	58	55	55	60	59	47
<b>Primary Applications</b>	-Bonded fibers -Coatings -Adhesives	-Adhesives -Dipped goods -Non-woven fabric Low modulus	-Adhesives -Dipped goods -Non-woven fabric Very low modulus	-Adhesives -Dipped goods -Non-woven fabric Low modulus -Accelerator-free	-Dipped goods -Adhesives -Foam -sealant	-Dipped goods -Fabric impregnation (Binder) -Dipped goods -Coatings -Carpet backing	-Treated paper -Bonded fibers -Dipped goods -Coatings	-Dipped goods -Adhesives -Bonded fibers -Treated paper -Mastics	-Adhesives -Adhesives	-Pressure sensitive adhesives -Primer	-Adhesives Good Quick Break with Excellent Stability	-Adhesives Excellent Quick Break with Decent Stability	-Adhesives	-Elasticized portland cement -Sealants -Coatings -Asphalt Emulsion	-Contact adhesives -Coating -Mastics -Sealant -Asphalt Emulsion	
<b>Physical Characteristics</b>																
pH , 25°C <sup>(1)</sup>	11.5	12	12	12	12	12.5	12	12.5	11.5	11.5	12.5	12.5	12.5	12.3	12.5	7
Specific gravity, 25°C																
Latex	1.15	1.12	1.12	1.12	1.13	1.12	1.11	1.13	1.11	1.11	1.13	1.12	1.12	1.13	1.13	1.09
Polymer	1.41	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.24
Brookfield viscosity, mPa·s, 25°C (Spindle No.1, 30rpm)	8	10	10	10	400 <sup>(2)</sup>	40	15	40	10	10	35	300	300	30	200	300 <sup>(2)</sup>
Surface tension, dyn/cm, 20°C	37	39	39	39	39	41	38	41	38	38	41	36	36	40	41	47
Emulsion Particle size, μm	0.12	0.12	0.12	0.12	0.12	0.21	0.12	0.21	0.12	0.12	0.21	0.16	0.16	0.21	0.21	0.40
Polymer type	Med.Gel	Med.Gel	Med.Gel	High Gel	Med.Gel	Low Gel	High Gel	Med-High Gel	High Gel	High Gel	Sol	Sol	Sol	Med-High Gel	Med-High Gel	Med.Gel
Emulsifiers	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate	Resinate, Non-ionic	Polyvinyl alcohol
<b>Wet gel properties</b>																
Tensile strength	Very high	Very high	Very high	High	Very high	Medium	Medium	Very high	Medium	Medium	Low	Very high	Very high	Very high	Very high	High
Elongation	High	High	High	High	High	High	Medium	High	Medium	Medium	Very high	High	High	High	High	Medium
<b>Cure rate</b>	Slow	Medium	Medium	Medium-High	Medium	Slow-Medium	Fast	Med.-high	Slow	Slow	Medium	Slow	Slow	Med.-high	Med.-high	Medium
<b>Cured Film Properties</b>																
Modulus	Very high	Low	Low	Low	Low	Low	Medium	High	Med.-High	High	Medium	High	High	High	High	Medium
Tensile strength	High	Medium	Medium	Medium	Medium	Medium	Med.-high	High	Medium	High	Medium	High	High	High	High	Medium
Crystallization rate	Extremely fast	Extremely slow	Extremely slow	Extremely slow	Extremely slow	Medium	Very slow	Medium - slow	Very fast	Medium	Medium	Very fast	Very fast	Fast - Medium	Medium - slow	Slow

Note : \*1): pH values decline slowly upon ageing

\*2):Spindle No.2

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