



Product Selection Guide Printing & Packaging Industry

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Shiva

PERFORMANCE MATERIALS



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The best choice for printing and packaging applications
Key resin portfolio

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SUSTAINABILITY

Bond Beyond Boundaries...

Responsible living each day! We accept responsibility for our businesses, our employees, the environment and the society. We are interlinking disciplines, skills, and perspectives with one another so that as a partner of our customers we can create value-generating and sustainable solutions. Taking responsible action to generate economic success runs parallel with our company's mission & vision. The concept of sustainability impacting all the components- environmental, social, and economic are catered to make the customers' lives better.



Minimising the use of water
in our operations



Increasing the use of
recycled water



Developing rain water harvesting
systems to replenish ground
water resources

Working towards sustainable future

SHIVA wants to contribute to a world that provides viable future with enhanced quality of life for everyone. We do so by creating chemistry for our customers and society and by making the best use of available resources. We live our corporate purpose "We create chemistry for a sustainable future" by

Sourcing and
producing responsibly

Acting as a fair and
reliable partner

Connecting creative minds to find
the best solutions for market needs



About us

Shiva's product portfolio of Resins, Solutions & Emulsions are one of the broadest in the Industry and can deliver a "total package" that is more sustainable, cost-efficient and meet customer preferences around the world. We design resin systems with tomorrow's environmental requirements in mind, by an awareness of the need for continuity, and by a strong sense of responsibility. We have an outstanding sustainability record in polymers that we continue to improve each day.

PRODUCTION SITE

- State-of-the-art manufacturing facility spread over 28,000 sq.mtrs.
- Plant runs on "Distributed Control Systems (DCS)" with "Mass Flow Meters" for feeding raw-materials.
- Continuous production of Solid Resins using in house technology.
- Batch processes for Emulsion Polymerization.
- In house application laboratory for hand holding & troubleshooting.
- Dedicated department for EHS - Environment, Health & Safety.
- Compliant with all Regulations for all major countries.



WATER-BASED RESINS

SPCRYL

STYRENE ACRYLIC RESINS

Shiva's SPCRYL Solid Resins meet the most stringent formulation requirements of ink and overprint varnish manufacturers: High molecular weight resins for high pigment loading, high solids dispersions used in quality ink for film, foil, and paper applications; general purpose, mid-range molecular weight resins for gloss, resolubility, and drying speed modification for use in inks and overprint varnishes; very low molecular weight resins used in high gloss overprint varnishes and label inks.



Product	Appearance	Key Properties	Non-volatiles %	Molecular Weight	Acid Number (on solids)	Tg('C)	Descriptions & Applications
SPCRYL LOP	Clear Flakes	Glycol Ether Free, Highest Gloss, High Solid/Low, Viscosity Solutions, Excellent Re-Solubility	Min 99	1700 - 2300	230 - 240	75 - 85 °C	Lowest molecular weight acrylic resin designed for high gloss with high solid formulation in inks and varnishes
SPCRYL LOFG		Glycol Ether Free, Gloss Improvement, Increase of transfer and Re-Solubility, Improvements of Block & Heat Resistance,	Min 99	4000 - 6000	220 - 230	100 - 110 °C	Low molecular weight acrylic resin designed for high gloss with high solid formulation in inks and varnishes
SPCRYL MOFG		Glycol Ether Free, Gloss Improvement, Increase of transfer and Re-Solubility, Improvements of Block & Heat Resistance,	Min 99	8000 - 9000	220 - 230	115 - 125 °C	General purpose, mid-molecular weight acrylic resin designed for inks and varnishes formulations
SPCRYL PGR		Making high quality emulsions, Excellent rheological behavior, Gloss improvement, Increase of transfer & re-Solubility Improvements of block & heat resistance	Min 99	8000 - 9000	220 - 230	105 - 115 °C	Glycol based, general purpose, mid-molecular weight acrylic resin designed for inks and varnishes formulations
SPCRYL HOFG		Glycol Ether Free, Increase of Transfer & re-Solubility, Improvements of Block & Heat resistance, Excellent Print Characteristics	Min 99	11,000 - 12,000	220 - 230	125 - 135 °C	High molecular weight, acrylic resin designed for high quality varnishes as well as pigment dispersions
SPCRYL HOFG-H		Glycol Ether Free, Increase of Transfer & re-Solubility, Improvements of Block & Heat resistance, Excellent Print Characteristics	Min 99	12,000 - 13,000	220 - 230	125 - 135 °C	High molecular weight, acrylic resin designed for high quality varnishes as well as pigment dispersions
SPCRYL 160		Glycol Ether Free, Excellent Pigment dispersion, Improvement in Color Strength , Excellent ink Stability	Min 99	15,000 - 17,000	220 - 240	130 - 140 °C	Very High molecular weight, acrylic resin designed for high quality pigment dispersions
SPCRYL 170		Glycol Ether Free, Excellent Pigment dispersion , Improvement in Color Strength , Excellent ink Stability	Min 99	16,000 - 18,000	220 - 240	130 - 140 °C	Highest molecular weight, acrylic resin designed for high quality pigment dispersions



WATER-BASED RESINS**SPCRYL****STYRENE ACRYLIC RESIN SOLUTIONS**

Shiva's SPCRYL Resin Solutions meet the most stringent formulation requirements of inks and overprint varnish manufacturers.



Product	Appearance	pH	Solids %	Brookfield viscosity, cps @ 30 degree	Acid Value	Tg ('C)	Descriptions & Applications
SPCRYL 50 ECO	Amber clear liquid	8.5 - 9.5	48 - 52	1500 - 2500	240	75	50% Solution of SPCRYL LOP Resin designed for high solid formulation which provides high gloss and hold out properties.
SPCRYL 55 ECO	Amber clear liquid		53 - 55	2000 - 4000	240	75	55% Solution of SPCRYL LOP Resin designed for high solid formulation which provides high gloss and hold out properties.
SPCRYL 75 ECO	Yellow clear liquid		33 - 34	1000 - 2000	220	95	33% solution of SPCRYL LOFG Resin used as dispersion for gloss, hold out and resolubility in inks and varnishes
SPCRYL 59	Yellow clear liquid		31 - 33	1000 - 2000	220	110	32% solution of mid-molecular weight acrylic resin designed for gloss, hold out and resolubility in inks and varnishes
SPCRYL 60 ECO	Yellow clear liquid		34 - 35	4000 - 6000	220	110	Solvent free general purpose acrylic dispersion of 34% mid-molecular weight resin for gloss, hold out and resolubility in inks and varnishes
SPCRYL 60 MEA	Amber clear liquid		38 - 40	5000 - 8000	220	110	MEA based, low smell, general purpose acrylic dispersion of 34% mid-molecular weight resin for inks and varnishes
SPCRYL 61	Yellow clear liquid		34 - 36	4000 - 6000	220	110	General purpose acrylic dispersion of 34% mid-molecular weight resin for gloss, hold out and resolubility in inks and varnishes
SPCRYL 61 MEA	Amber clear liquid		38 - 40	3000 - 6000	220	110	MEA based, low smell, general purpose acrylic dispersion for gloss, hold out and resolubility in inks and varnishes
SPCRYL 63	Yellow clear liquid		30 - 32	3000 - 6000	220	120	High molecular weight acrylic dispersion for higher quality pigment grinding
SPCRYL 63 MEA	Amber clear liquid		30 - 32	8000 - 12000	220	120	MEA based high molecular weight acrylic dispersion for higher quality pigment grinding

WATER-BASED RESINS

SPCRYL

HPD RESIN SOLUTIONS

Shiva's SPCRYL HPD line of resin solutions allow ink manufacturers to make pigment dispersions that reduce milling time, are higher in pigment loading and color development, are viscosity stable and compatible in most water-based ink systems.



Product	Appearance	pH	Solids %	Brookfield viscosity, cps @ 30 degree	Acid Value	Tg('C)	Descriptions & Applications
SPCRYL 160 EH	Yellow clear liquid	8.5 - 9.5	33 - 35	3000 - 6000	230	125	High solid, high viscosity and high molecular weight dispersion for high quality pigment dispersions.
SPCRYL 160 EU	Yellow clear liquid		30 - 32	1500 - 3000	230	125	High solid and low viscosity dispersion designed for high quality pigment dispersion. High pigment loading with low viscosity.
SPCRYL 160 MEA	Amber clear liquid		38 - 40	4000 - 6000	230	110	MEA based high solid and low viscosity dispersion designed for high quality pigment dispersion. High pigment loading with low viscosity.
SPCRYL 160 EMEA	Amber clear liquid		35 - 38	1500 - 2500	230	110	MEA based high solid and low viscosity dispersion designed for high quality pigment dispersion. High pigment loading with low viscosity.
SPCRYL 170E	Yellow clear liquid		27 - 29	500 - 1000	230	130	High molecular weight dispersion for high quality pigment dispersions
SPCRYL 196	Yellow clear liquid		35 - 37	3000 - 6000	200	85	High pigment dispersion, cost effective
SPCRYL 296	Amber clear liquid		35 - 36	200 - 600	140	20	Acrylic dispersion designed for high pigment loading with low viscosity and stability
SPCRYL 396	Yellow clear liquid		30 - 32	100 - 500	220	NA	Acrylic dispersion designed for high pigment loading with low viscosity and stability
SPCRYL 496	Yellow clear liquid		34 - 35	300 - 800	220	NA	Acrylic dispersion designed for high pigment loading with low viscosity and stability
SPCRYL 1134	Yellow clear liquid		34 - 36	100 - 1000	NA	NA	Acrylic dispersion designed for high pigment loading with lowest viscosity and stability
SPCRYL 2230	Yellow clear liquid		30 - 32	200 - 800	NA	100 - 105	Acrylic dispersion designed for high pigment loading with lowest viscosity and stability

WATER-BASED RESINS

SPCRYL

HPD RESIN SOLUTION – N SERIES

Shiva's SPCRYL HPD line of resin solutions allow ink manufacturers to make pigment dispersions that reduce milling time, are higher in pigment loading and color development, are viscosity stable and compatible in most water-based ink systems. HPD N Series is new version of existing product line with enhanced properties from pigment dispersions to low viscosity features.



Product	Appearance	pH	Solids %	Brookfield viscosity, cps @ 30 degree	Acid Value	Tg ('C)	Descriptions & Applications
SPCRYL 160 EH-N	Yellow clear liquid	8.5 - 9.5	33 - 35	3000 - 6000	230	105 - 115	Acrylic dispersion designed for high pigment loading with low viscosity and stability
SPCRYL 296N	Amber clear liquid		35 - 36	200 - 600	140 - 150	15 - 20	Acrylic dispersion designed for high pigment loading with lowest viscosity and stability
SPCRYL 396N	Amber clear liquid		30 - 32	100 - 500	200 - 220	85 - 95	Acrylic dispersion designed for high pigment loading with lowest viscosity and stability
SPCRYL 496N	Yellow clear liquid		34 - 35	300 - 800	200 - 230	55 - 65	Acrylic dispersion designed for high pigment loading with lowest viscosity and stability



WATER-BASED RESINS

SPCRYL

FILM FORMING EMULSIONS

Shiva's Rheology Controlled (RC) emulsions allow inks and overprint varnishes to meet the demanding shear stress encountered in high speed flexo graphic and gravure printing. In addition, they provide wetting and adhesion as well as gloss and clarity to inks and overprint varnishes on a wide variety of substrates.



Product	Appearance	Key Properties	Non-volatiles %	pH (30°C)	Viscosity (cps @ 30°C)	Molecular Weight	Acid Number (on solids)	Tg ('C)	Descriptions & Applications
SPCRYL EOFGL	Semi translucent emulsion	Film forming emulsion , Water resistance, Good gloss, Rub resistance , Excellent film wetting	47 - 49	8.5 ± 0.3	Up to 1000 cps	> 200,000	50 - 55	-25 to -35	General purpose, soft film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL EOFGL-T	Semi translucent emulsion	Film forming emulsion , Water resistance, Good gloss, Rub resistance , Excellent film wetting	47 - 49	8.5 - 9.5	Up to 1000 cps		50 - 55	-25 to -35	Good oil and grease resistance, soft film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL EOFG	Semi translucent emulsion	Film forming emulsion , Water resistance, Good gloss, Rub resistance , Excellent film wetting	47 - 49	8.5 ± 0.3	Up to 1000 cps		65 -70	-8 to -12	General purpose, film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL 8052	Semi translucent emulsion	Film forming emulsion , Water resistance, Good gloss, Rub resistance , Excellent film wetting	44 - 46	8.1± 0.3	Up to 1000 cps		65 - 70	-35	Low odor, film film forming styrene acrylic emulsion for water based inks and Varnishes used in paper, flexible films and foil substrates
SPCRYL EOFG-T	Semi translucent emulsion	Good Oil & Grease Resistance Good Gloss Low Foaming Pigment Wetting	46 - 48	8.5 - 9.5	140-160 sec		65 - 70	-5 to -15	Good oil and grease resistance, soft film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL EHG	Semi translucent emulsion	Excellent Film Forming Good Gloss & Transparency Excellent Water & Grease Resistance Economical	45 - 47	8.5 ± 0.3	Up to 1000 cps		60 - 65	5 to 10	Medium range, film forming styrene acrylic emulsion for ink and overprint varnish formulations
SPCRYL EFG	Semi translucent emulsion	Excellent Film Forming Good Gloss & Transparency Excellent Water & Grease Resistance Economical	45 - 47	8.5 ± 0.3	200 - 800		50 - 55	10 to 15	Medium range, soft film forming styrene acrylic emulsion for ink and overprint varnish formulations
SPCRYL EFGH	Semi translucent emulsion	Excellent Film Forming Good Gloss & Transparency Excellent Water & Grease Resistance Economical	45 - 47	8.5 ± 0.3	200 - 800		60 - 65	25 to 30	Medium range, film forming styrene acrylic emulsion for ink and overprint varnish formulations
SPCRYL EFG-T	Semi translucent emulsion	Excellent Film Forming Good Gloss & Transparency Excellent Water & Grease Resistance Economical	44 - 46	8.5 - 9.5	800-1200 cps		60 - 65	-2 to -5	Medium range, film forming styrene acrylic emulsion for ink and overprint varnish formulations

WATER-BASED RESINS

SPCRYL

NON FILM FORMING EMULSIONS

Shiva's Rheology Controlled (RC) emulsions allow inks and overprint varnishes to meet the demanding shear stress encountered in high speed flexographic and gravure printing. In addition, they provide wetting and adhesion as well as gloss and clarity to inks and overprint varnishes on a wide variety of substrates.



Product	Appearance	Key Properties	Non-volatiles %	pH (30°C)	Viscosity (@ 30°C)	Molecular Weight	Acid Number (Solid Base)	Tg (°C)	Descriptions & Applications
SPCRYL EOH	Semi translucent emulsion	High gloss and clarity , Good heat resistance, Fast drying , Good resolubility	47 - 49	8.5 ± 0.3	Up to 1000	> 200,000	50 - 55	95 to 100	General purpose, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL EO	Semi translucent emulsion	Glycol Ether Free Excellent Heat Resistance Excellence Optical Clarity Excellent Gloss Fast Drying	44 - 45	8.5 ± 0.3	Up to 500		70 - 80	95 to 105	High gloss, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL EO ECO	Semi translucent emulsion	Glycol Ether Free Excellent Heat Resistance Excellence Optical Clarity Excellent Gloss Fast Drying	44 - 45	8.5 ± 0.3	Up to 500		70 - 80	95 to 105	ECO version, High gloss, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL EO-S	Semi translucent emulsion	High gloss and clarity , Good heat resistance, Fast drying , Good resolubility	44 - 46	8.5 ± 0.3	Up to 1000		70 - 75	95 to 105	High gloss, moderate viscosity, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL 8055	Semi translucent emulsion	Excellent resolubility, high gloss, low odor, suitable for metallic inks	46 - 47	7.8 - 8.3	Up to 500		70 - 75	100 to 110	Low odor, High gloss, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL OPH	Opaque emulsion	High Hiding, high opacity, high colour intensity	46 - 47	8.0 - 8.5	500 - 1500		30	100 to 110	Capable to Hide brown and craft substrate background, low odor, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL OPL	Opaque emulsion	High Hiding, high opacity, high colour intensity	37 - 39	7.5 - 8.5	up to 300		60	100 to 110	Higher Capability to Hide brown and craft substrate background, non film forming styrene acrylic emulsion for water based inks and Varnishes
SPCRYL OPHF	Opaque emulsion	High Hiding, high opacity, high colour intensity	46 - 47	8.5 - 9.0	500 - 1500		30	100 to 110	Capable to Hide brown and craft substrate background, non film forming styrene acrylic emulsion for water based inks and Varnishes



WATER-BASED RESINS

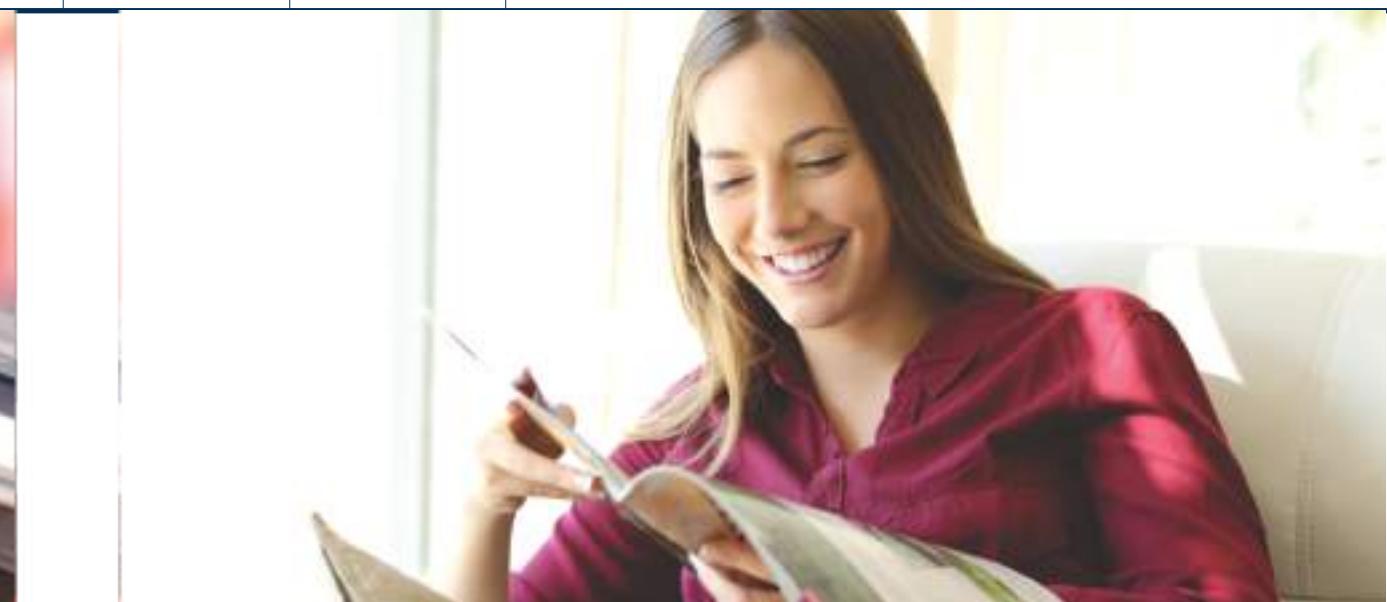
SPCRYL

COLLOIDAL EMULSIONS

Shiva's colloidal emulsions low cost-in-use makes them an excellent choice as a letdown resin for corrugated inks. They can also be used as a dispersion resin for carton black which makes it possible to manufacture a black corrugated ink using only one polymer. From low cost brown box printing to medium quality band colors, SPCRYL colloidal emulsions meet the formulators' need for balance of print properties and economy.



Product	Appearance	Key Properties	Solids %	pH (30°C)	Viscosity (cps @ 30°C)	Molecular Weight	Acid Number (on solids)	Tg ('C)	Descriptions & Applications
SPCRYL 91	Clear Viscous Solution	Excellent Re-Solubility Excellent Wetting For Pigments Good Gloss & Transparency Good Rheological Stability Excellent Transfer & Printability	30 - 31	08 - 10	8000-15,000	NA	NA	20 to 40	General purpose, acrylic colloidal emulsion designed as a sole vehicle or let-down vehicle for pigments.
SPCRYL 142	Milky White Emulsion	Excellent Hot Mar Resistance High Efficiency Excellent ink Viscosity Stability & Dilution Excellent Transfer & Printability	39 - 41	6.0 - 6.5	Up to 100 cps	50,000	120 - 130	20 to 40	
SPCRYL HMR 45	Milky White Emulsion	Excellent Hot Mar Resistance High Efficiency Excellent ink Viscosity Stability & Dilution Excellent Transfer & Printability	44 - 45	2.0 - 4.0	Up to 100 cps	75,000	150	75	An economical universal acrylic colloidal emulsion for pre-print and post-print kraft and corrugated board applications offering excellent ink viscosity stability with good transfer and printability.
SPCRYL HMR 661	Milky White Emulsion		44 - 45	2.0 - 4.0	Up to 100 cps	85,000	150	75	
SPCRYL HMR 45H	Milky White Emulsion		44 - 45	2.0 - 4.0	Up to 100 cps	75,000	150	75	
SPCRYL HMR 45T	Milky White Emulsion		44 - 45	2.0 - 4.0	Up to 100 cps	NA	165	95	
SPCRYL HMR 668	Milky White Emulsion		44 - 45	2.0 - 4.0	Up to 100 cps	NA	165	120	
SPCRYL HMR 266	Milky White Emulsion		49 - 50	2.0 - 4.0	Up to 100 cps	NA	120	40	



WATER-BASED RESINS

SPCRYL

SPECIALTY EMULSIONS



Product	Appearance	Key Properties	Non-volatiles %	pH (30°C)	Viscosity (cps @ 30°C)	Molecular Weight	Acid Number (on solids)	Tg ('C)	Descriptions & Applications
SPCRYL 1695	Semi translucent emulsion	non-metal, High heat resistance, adhesion on poly film, clarity with gloss	38 - 40	8.5 - 9.5	100 -1000	> 200,000	NA	-45	Non-metal or without zinc soft film forming acrylic emulsion for high heat resistance applications in inks and varnishes
SPCRYL 1685	Semi translucent emulsion	High heat resistance, adhesion on poly film, clarity with gloss	42 - 44	9.2 - 9.8	200 - 500	> 200,000	NA	-20	Zinc based film forming acrylic emulsion for high heat resistance applications in inks and varnishes
SPCRYL 1665	Semi translucent emulsion	Excellent Adhesion High Heat ResistanceExcellent Clarity With Gloss	35 - 37	9.2 - 9.8	Up to 500 cps	> 200,000	NA	-20	Zinc based film forming acrylic emulsion for highest heat resistance applications in inks and varnishes
SPCRYL 1630	Milky White Emulsion	Excellent water repellency, good scuff and COF with gloss	38 - 40	8.0 - 9.0	200 - 400	> 200,000	60	-20	Soft emulsion for low COBB and MVTR properties on paper and water repellency application
SPCRYL MAT 40	White emulsion	excellent opacity, no any metallic additives, good adhesion with scuff resistance	38 - 40	8.0 - 9.0	500 - 1000	> 200,000	NA	NA	Silica or metallic free Cross-linked acrylic emulsion with very low gloss for inks and varnishes
SPCRYL 2664	Semi translucent emulsion	soft film forming, suitable for fine line anilox printing, improve colour strength	42 - 44	9.0 - 10.0	200 - 800	> 200,000	170	NA	Soft emulsion for high colour strength inks and suitable for fine-line anilox printing
SPCRYL 09	Semi translucent emulsion	Glycol ether Free, Excellent Heat Resistance, Excellent Optical clarity , Excellent Gloss, Fast Drying, Film forming hard emulsion .	43 - 45	8.0 - 9.0	Up to 500 cps	NA	80 to 90	65 to 75	Hard but film forming acrylic emulsion with high gloss for inks and varnishes
SPCRYL FLEX 5000	Semi translucent emulsion	Cross-linked emulsion, Good re-solubility, good wet and dry resistance .	42 - 43	9.0 - 9.5	200 - 1000	> 200,000	90	NA	Soft and Self crosslinking acrylic emulsion for water resistance, good adhesion on film substrates
SPCRYL 538-A	Semi translucent emulsion	Good alcohol / chemical resistance, good re-solubility,	45 - 47	9.0 - 10.0	100 - 400	> 200,000	55	65	Non film forming acrylic emulsion for alcohol resistance in inks and varnishes
SPCRYL 538-AM	Semi translucent emulsion	low smell, Good alcohol / chemical resistance, good re-solubility,	45 - 47	9.0 - 10.0	100 - 400	> 200,000	55	65	Low smell MEA based non film forming acrylic emulsion for alcohol resistance in inks and varnishes
SPCRYL 711	Translucent Emulsion	Low Heat Seal Excellent Clarity & Printability Used For Opp Films Low Residual Odour	19 - 21	9.0 - 10.5	Up to 100 cps	> 200,000	NA	50 to 60	Acrylic dispersion without any solvent designed for OPP film heat sealing properties
SPCRYL HSE	Semi translucent emulsion	Excellent graphic qualities , High gloss, Good heat resistance, Excellent compatibility with other additives	48 - 50	9.0 ± 0.3	350- 850 cps	NA	32 to 35	-5 to -8	Soft acrylic emulsion designed for blister application on paper to film like PVC, PET, etc.

WATER-BASED RESINS

SPCRYL

SPCRYL ADDITIVES

Shiva's SPCRYL Additives meet the most stringent formulation requirements of ink and overprint varnish manufacturers: High molecular weight resins for high pigment loading, high solids dispersions used in quality ink for film, foil, and paper applications; general purpose, mid-range molecular weight resins for gloss, resolubility, and drying speed modification for use in inks and overprint varnishes; very low molecular weight resins used in high gloss overprint varnishes and label inks.



Product	Appearance	Key Properties	Non-volatiles %	pH (30°C)	Viscosity (cps @ 30°C)	Molecular Weight	Acid Number (on solids)	Tg ('C)	Descriptions & Applications
SP Zinc 15	Clear solution	Cross-linking agent , improve film hardness, high heat resistance	14 - 16	10 to 12	Up to 50 cps	NA	NA	NA	Zinc solution as a cross-linking agent for water and heat resistance also improve film hardness in inks and varnishes
SP Wax 35	Translucent dispersion	Easy to handle, enhanced scuff and scratch resistance, anti-blocking	33 - 35	9.5 - 11.5	Up to 100 cps	NA	NA	NA	Uniform nano particle size polyethylene wax dispersion that improves rub and mar resistance in inks and varnishes



