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WATER-BORNE technology
VARANOVA
PRODUCTS WITH PRESPECTIVE

POLYMER INNOVATIONS

FOR COATING & PAINT

Modern Binders

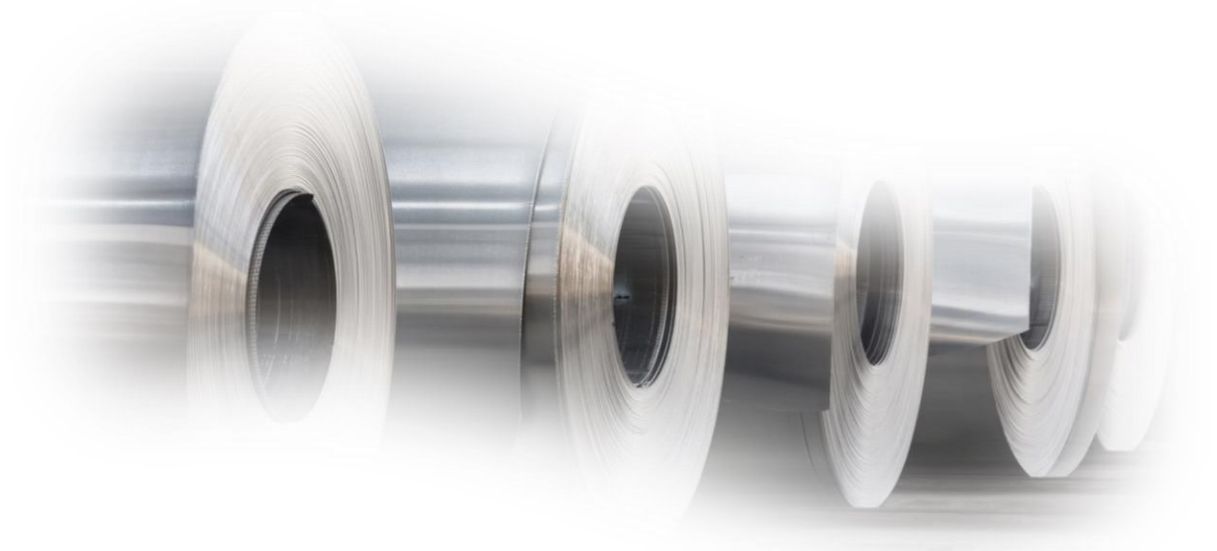
TECHNOLOGIES FOR A SECURE FUTURE

VARA CO SOL
PRODUCTS WITH PRESPECTIVE

ADVANCED POLYMER TECHNOLOGIES FOR INDUSTRIAL COATINGS

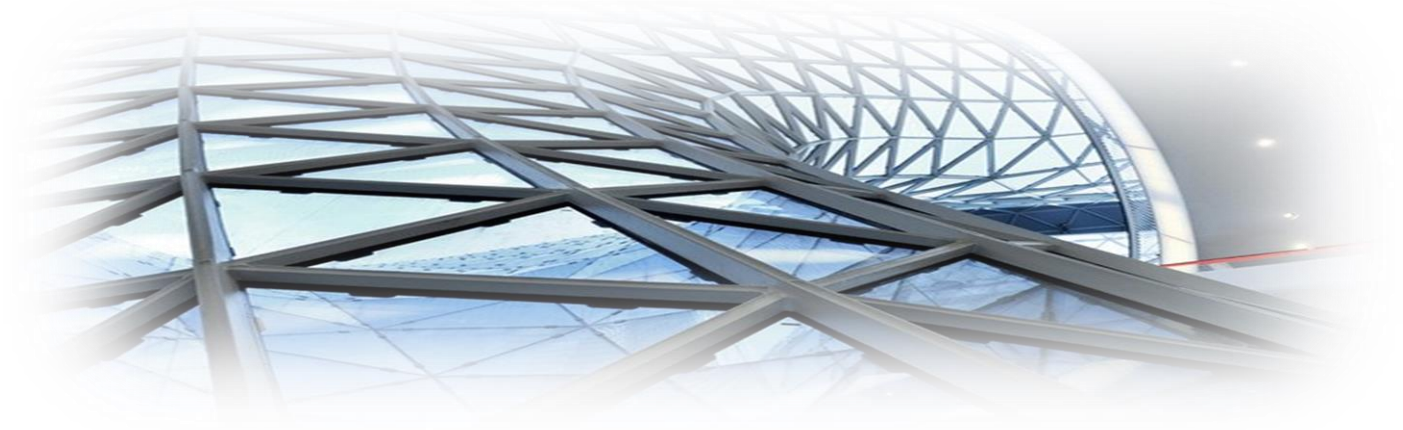
SOLVENT-BORNE & WATER-BORNE POLYESTER INNOVATION

ENVIRONMENTALLY FRIENDLY HIGH-QUALITY COATINGS RESINS



Our solutions and services stand for quality and innovation

We have a wide range of water-borne and solvent-borne and also modified polyester resin technologies that when formulated into coatings provide an optimal performance and durability.



WATER-BORNE & SOLVENT-BORNE POLYESTER INNOVATION

We have a wide range of water-borne and solvent-borne; high molecular and solvent-free polyester resin technologies that when formulated into coatings provide an optimal performance and durability. Also we offers modified polyester resins; urethane modified, acrylic modified, epoxy modified, silicone modified polyester (SMP) resins, used in high quality, long life industrial finishes, light amauture finishes and high performance primers.

WOOD
PROTECTIVE
CAN
COIL
METAL
PLASTIC
AUTOMOTIVE
FLOORING
ADHESIVE
CASTING

Coating resins for cans & containers

In metal cans and other rigid metal packaging, our broad range of saturated polyester coating resins is helping the industry move away from suspect raw materials and replace them with more sustainable alternatives.

All this while staying true to our long-established reputation in this business for durable and highly adhesive resins that are flexible enough to work with a wide range of different products – while enabling the high line speeds that are so important to manufacturers. From caps and closures to aerosols, and from tubes to both two-piece and three-piece cans, our resins for white base coat and overprint varnish can do the job.

HIGH-QUALITY RESINS FOR RELIABLE METAL COATING SOLUTIONS

Protection and decoration: These are the two main functions of can coatings. These coatings must meet very strict requirements, especially with regard to their protective function.

It is impossible to imagine our everyday life without the tin can. To prevent any interaction between the metal and the contents, an interior coating is essential.

It is impossible to imagine our everyday life without it and it can be found in every supermarket: the tin can - indestructible container for food of all kinds. The can owes its entry into almost every household shelf in the world to none other than Napoleon Bonaparte.

To prevent any interaction between the metal wall and the actual contents of the can, an inner coating of the cans is essential. This must be particularly efficient and be characterised by high elasticity and resistance. This means that even if the can is dented, the food inside remains well protected. For years, epoxy resin-based products have established themselves as the industry standard. However, these have been the subject of public debate for some time due to their harmful raw material base bisphenol-A (BPA).

Polyester for the interior coating of cans with excellent protective properties !

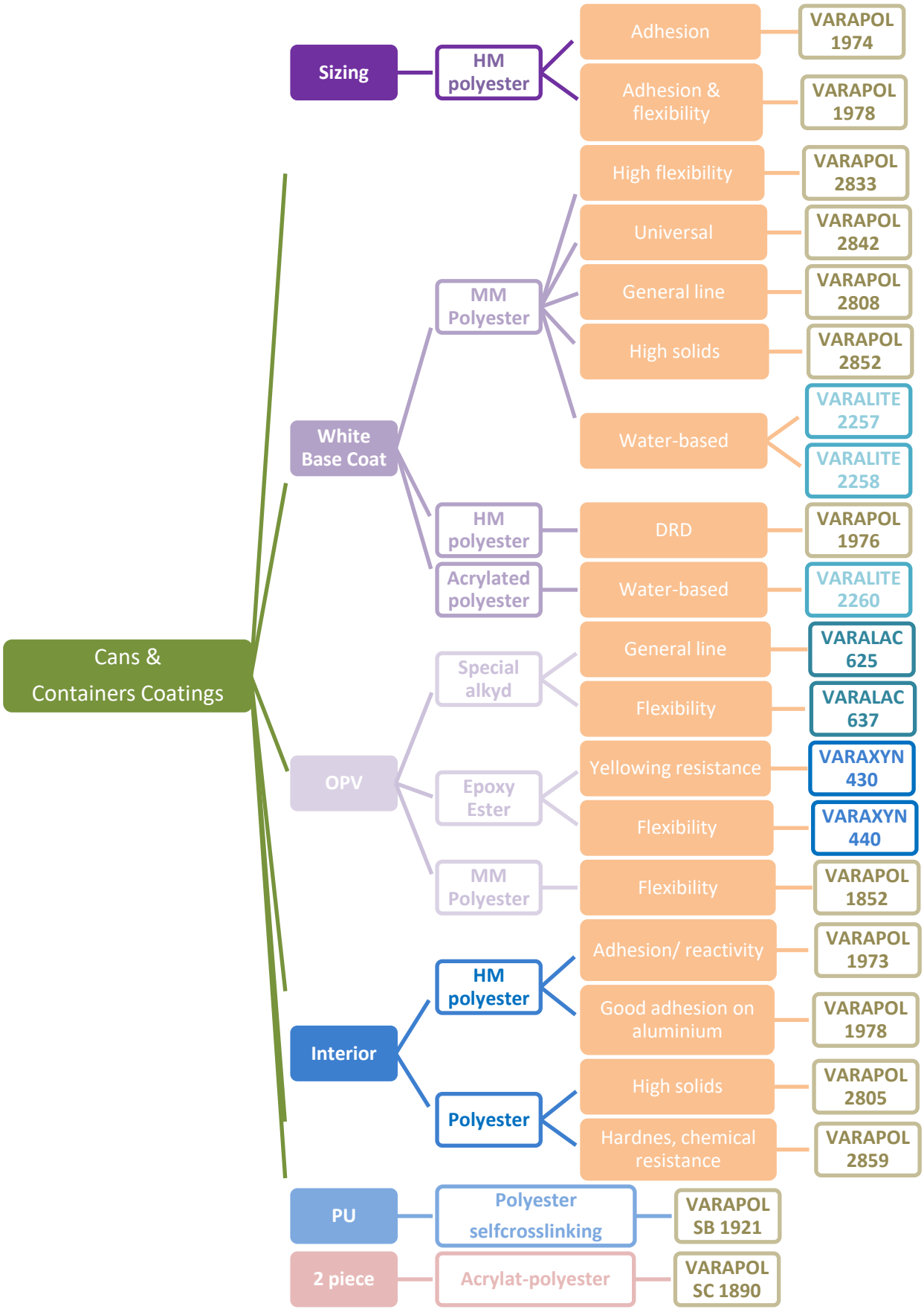
New Generation of coatings for the internal protection of food 3 piece cans and ends.

BPA-NI-, thanks to our innovation we can!

"A good example is our work in developing tailor-made BPA-NI products that meet the increasingly stringent regulations for metal applications. Our new polyester range, designed for food contact, is able to replace epoxy products with BPA.

Our products are used in gold, clear and white internals for all types of cans and closures. Many developments are linked to various regulatory issues. For example, there is an increasing requirement to remove materials such as naphthalene and tin.

BPA-NI-, thanks to our innovation we can!



CANS & CONTAINERS COATING

COATING FOR ALUMINIUM TUBES

▪ **VARAPOL CC 2842**	▪ FDA approved, saturated linear polyester
▪ **VARAPOL CC 2833**	▪ linear modified, saturated polyester.
▪ **VARAPOL CC 2808**	▪ FDA approved, saturated linear polyester
▪ **VARAPOL CC 1865**	▪ FDA approved, saturated branched polyeste)
▪ **VARAPOL CC 2825**	▪ FDA approved, saturated linear polyester, isocyanate modified polyester
▪ **VARAPOL SB 1924**	
▪ **VARAXYN EE 480**	▪ FDA approved, epoxy ester
▪ **VARALITE W 2257**	▪ FDA approved, water-based polyester

External Coatings

- White enamel, (PUR)
- White enamel, (PUR) matt
- White enamel, (PES)
- Clear external coating (PES)
- White enamel

Internal Coatings

- Internal liner, gold
- Internal liner, beige
- Sealing compound, grey

Pharmaceutical products require a high level of health and safety as well as protection of their contents. We have been supplying coating resins that meet safety standards and are reliable over the long term.

COATINGS FOR MONOBLOC AEROSOL CANS

VARAPOL CC 2842	FDA approved, saturated linear polyester
VARAPOL CC 2833	saturated linear poylester
VARAPOL CC 2825	FDA approved, saturated linear polyester
VARAPOL CC 2808	FDA approved, saturated linear polyester
VARAXYN EE 430	FDA approved, epoxy ester
VARAXYN EE 440	FDA approved, epoxy ester
VARALITE W 2250	FDA approved, water-based polyester
VARAPOL HM 1978	FDA approved, high molecular polyester
VARAXYN EE 480	FDA approved, epoxy ester, water soluble

External Coatings

- White basecoat
- White basecoat; clearcoat
- Overvarnish, clearcoat
- Overvarnish, full-matt
- Overvarnish, semi-matt

Internal Coatings

- Expoxy phenole internal liner, gold
- High molecular polyester

COATINGS FOR STELL BEVERAGE CANS

▪ **VARAPOL SC 1893**	▪ FDA approved, acrylic modified polyester
▪ **VARALITE W 2260**	▪ FDA approved, water-based polyester
▪ **VARALITE W 2250**	▪ FDA approved, water-based polyester
▪ **VARALITE W 2255**	▪ FDA approved, water-based polyester
▪ **VARAPOL SC 1890**	▪ FDA approved, acrylic modified polyester
▪ **VARAPOL CC 2852**	▪ polyester modified resin
▪ **VARAMUL AW 2643**	▪ water-based, carboxyl functional acrylic resin, designed for crosslinking with epoxy resins
▪ **VARAPOL CC 2808**	▪ polyester modified resin
▪ **VARALITE W 2257**	▪ water-borne, polyester modified resin
▪ **VARALITE W 2254**	▪ water-borne acrylic modified polyester

Exterior Coating

A wide range of varnishes are available, including clear varnishes that are retortable, matte varnishes that enhance the aesthetic appeal, and varnishes that are specialized to resist abrasion. In addition, we can offer proposals to meet the conditions of use, such as improvement of transportability or system that can reduce misting using new technology.

Internal lacquer

In addition to conventional epoxy-based products, we have established quality of environmentally friendly binder for BPANI lacquer. We can make proposals to meet customer needs, such as giving the retort resistance, optimizing spray suitability by controlling fluidity, and applying high forming ability to bottle cans by customizing the hardness of the coating film.

COATINGS FOR TECHNICAL PACKAGING

VARAPOL CC 2842	saturated linear polyester
VARAPOL CC 2808	saturated linear polyester
VARALAC AN 621	alkyd modified resin
VARALAC AN 637	alkyd modified resin
VARAXYN EE 430	FDA approved, epoxy ester
VARAXYN EE 440	FDA approved, epoxy ester
VARAXYN EE 480	FDA approved, epoxy ester, water soluble

External Coatings

- White basecoat, clearcoat
- White basecoat
- Overvarnish
- Clear protective, clearcoat

Internal Coatings

- Clear protective, clearcoat

Exterior Coating

Industrial materials serve to protect containers from outdoor storage, chemical damage, and frequent delivery. A wide variety of resins have been designed with the customer's convenience.

COATINGS FOR CROWN CORKS

▪ **VARAPOL CC 2808**	▪ saturated linear polyester
▪ **VARAPOL CC 2802**	▪ saturated reactive linear polyester
▪ **VARAPOL PM 829**	▪ FDA approved, polyester resin modified with phenolic
▪ **VARAPOL PM 832**	▪ FDA approved, polyester resin modified with phenolic
▪ **VARAXYN EE 440**	▪ epoxy ester
▪ **VARAXYN EE 430**	▪ epoxy ester

External Coatings

- White basecoat
- Clearcoat
- Overvarnish
- Gold varnishes

Exterior Coating

Polyester and epoxyester **VARAXYN** varnish are designed for high gloss on wet on wet system and on UV ink. Good flexibility and abration resistance are the characters with high temperature retort resistance. We can propose decorations by combining matte varnish on metal decoration inks.

COATINGS FOR 3-PIECE AEROSOL CANS

VARAXYN EE 470	epoxy ester)
VARAPOL CC 2808	saturated linear polyester
VARAPOL CC 2859	FDA approved raw materials, also for alcoholic content
VARAPOL HM 1974	FDA approved, high molecular polyester
VARAPOL HM 1978	FDA approved, high molecular polyester
VARAPOL CC 2842	polyester resin
VARAPOL CC 2833	polyester resin
VARAPOL SC 1893	acrylic modified satuareted polyester
VARALITE W 2257	water-borne polyester resin

External Coatings

- Sizing coat
- White basecoat
- Overvarnish

Internal Coatings

- Gold lacquer

COATINGS FOR 2- AND 3-PIECE FOOD CANS

VARAXYN EE 470	epoxy ester
VARAPOL CC 2808	saturated linear polyester
VARAPOL CC 2859	FDA approved raw materials, also for alcoholic content
VARAPOL SC 1890	acrylic modified polyester
VARAPOL HM 1978	FDA approved, high molecular polyester
VARAPOL HM 1970	FDA approved, high molecular polyester
N-AMID AH 315	FDA approved, epoxy hardener
VARAXYN EE 480	FDA approved, epoxy ester, water soluble
VARALITE W 2254	FDA approved, waterbased acrylic modified polyester resin

BPA-NI? Thanks to our innovation, yes we can!

"VARA CO TEC, innovation is something that's happening every day, sometimes quietly in the background – but always with our customers.

External Coatings

- White basecoat
- Overvarnish
- Glod lacquer
- Clear protective coating

Internal Coatings

- Gold lacquer
- Alu pigmented EP lauquer

Exterior Coating

Both base coating and top coating are available in acrylic and polyester. These have high functionality such as high gloss on wet on wet system and on UV ink, high temperature retort resistance, and resistance to damage during transportation.

COATINGS FOR LUG CAPS

VARALAC AN 621	alkyd modified
VARALAC AN 637	alkyd modified
VARAPOL CC 2808	saturated linear polyester
VARAPOL HM 1974	FDA approved, high molecular polyester
VARAPOL HM 1978	FDA approved, high molecular polyester

External Coatings

- Clear sizcoat
- Overvarnish
- White basecoat
- Basecoat in different colors

COATINGS FOR PILVER PROOF SREW CPAS

VARAXYN EE 430	epoxy ester
VARAXYN EE 440	epoxy ester
VARAXYN EE 480	FDA approved, epoxy ester, water soluble
VARALAC AN 621	alkyd modified
VARALAC AN 637	alkyd modified
VARAPOL CC 2808	saturated linear polyester

External Coatings

- Overvarnish, epoxy ester
- Overvarnish, polyester

Exterior Coating

Polyester and epoxyester **VARAXYN** varnish are designed for high gloss on wet on wet system and on UV ink. Good flexibility and abration resistance are the characters with high temperature retort resistance. We can propose decorations by combining matte varnish on metal decoration inks.

COATINGS FOR LONG CAPS

VARAXYN EE 430	epoxy ester
VARAXYN EE 440	epoxy ester
VARALAC AN 621	alkyd modified
VARALAC AN 637	alkyd modified
VARAPOL CC 2808	saturated linear polyester
VARAPOL HM 1974	FDA approved, high molecular polyester
VARAPOL HM 1978	FDA approved, high molecular polyester

External Coatings

- Clear sizcoat
- Overvarnish
- White basecoat
- Overvanish, semi matt
- Side wall warnish
- Black basecoat

BPA-N.I. PORTFOLIO COATINGS FOR COIL APPLICATION

▪ **VARAPOL SC 1890**	▪ acrylic modified polyester
▪ **VARAPOL CC 2808**	▪ saturated linear polyester
▪ **VARAPOL CC 2805**	▪ saturated branched polyester
▪ **VARAPOL HM 1974**	▪ FDA approved, high molecular polyester
▪ **VARAPOL HM 1978**	▪ FDA approved, high molecular polyester

Exterior coating

Our coil resin for Ends is water-based that can reduce VOCs. Rheology of the coating is controlled to provide excellent high speed coil applicaton. Excellent scratch resistance and high formability have been realized and have been used by a wide range of customers.

Internal coating

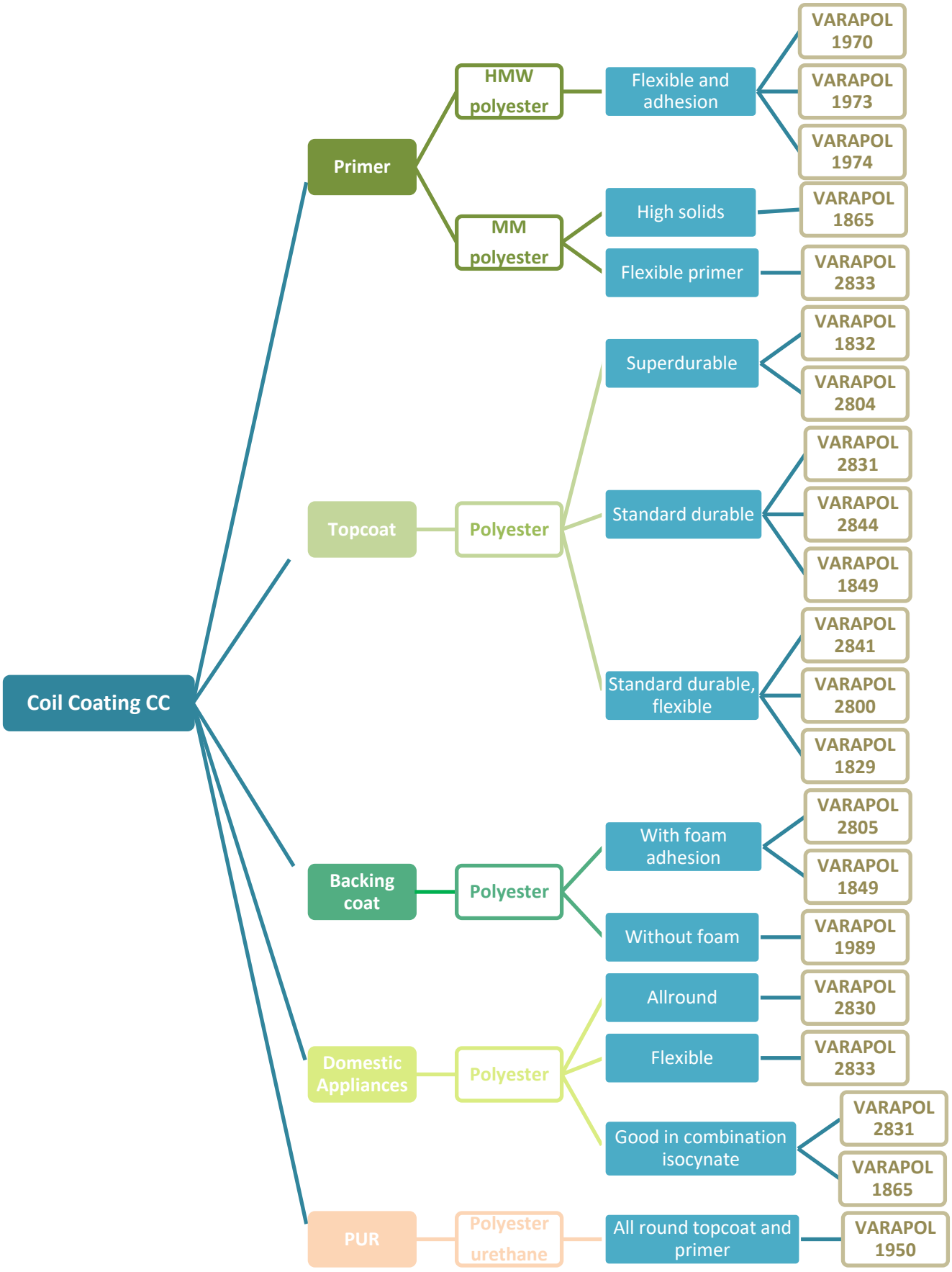
It has content resistance, substrate adhesion, and formability, and can be used for various applications such as beer, acidic beverages and retort beverage. In addition, we have many types of resin including BPANI coating, so we can offer binder performance proposals that meet customer demands.

Performance Expectations for High Quality and UV-Durable Coil Coatings

Coil coating is a special industrial process and most notably highly automated and continuous. In this form of coating, metal is pretreated which means that the coating is applied before it gets cut or formed thus allowing for firmly adhering and bonding finishes. Furthermore, coil coated metal can be far more resistant to corrosion and more durable due to these perfectly tight coatings. Most of the time, formed metal parts tend to have holes, valleys or recessed areas that make them hard to postcoat evenly – that is why precoating is the go-to process for non-stop productions and where highly durable coatings are required. However, coil coatings also require a great flexibility property.

A BROAD PORTFOLIO OF MODERN RESINS FOR ADVANCED COIL COATING APPLICATIONS

Coil Coatings with VARA CO SOL: Harder, Better, Faster, Stronger



COIL COATING

VARAPOL; Saturated polyester, solvent-based, solvent-free, industrial coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	Tg [°C]	Mn	OH-Value [mg KOH/g]	Main uses and characteristics
CC 1865	65 in S1/B	2.400 – 3.000	≤ 5,5	8	2300	89	For coil coatings and general industrial with amino or blocked urethane resins in the formulation of backing coatings such as primers with very good weather stability**. CC 1865 is conform to FDA § 175.300.**
CC 1829	66 in S1/BG	900 – 1.400	≤ 6	12	4500	59	CC 1829 S1BG-66 is cost effective, general purpose polymer, fast curing at high line speed, good flexibility, good durability, good flow and gloss. recommended for general purpose coil and metal packaging coatings.
CC 1849	65 in S1/BG	1.500 – 2.500	≤ 10	5	4500	50	CC 1849 S1/BG-65 is an oil free saturated polyester recommended for cost effective backers & exterior coil and metal packaging coatings with good adhesion to PU foam.
CC 1851	50 in S2/S1	2.000 – 4.000	≤ 3	30	6000	30	Sterilizable stamping enamels for can coatings, tube and aerosol can coatings (metal decorating enamels) twist off closures.
CC 1852	55 in S2/BG	2.000 – 4.000	≤ 3	32	6000	20	CC 1852 S2BG-55 is commended for deep drawable, sterilizable stamping enamels for can coatings, tube and aerosol can coatings (metal decorating enamels) twist off closures; coil coating primers for aluminium and one coat-systems for aluminium, top coats for interior architecture, vehicle cladding and home appliances.
CC 1832	65 in S2/BG	2.200 – 3.500	≤ 3	17	5000	33	CC 1832 S2/BG-65 is linear saturated polyester with medium molecular weight. Recommended in combination with amino or crosslinking polyurethane systems for exterior top coats coil coating, industrial stoving enamels, which offer supper UQV-A stability and super durability.
CC 1822	70 in S1	3.000 – 4.000	≤ 15	15	3300	85	CC 1822 is high solid, high reactive saturated polyester resin. In combination with amino or crosslinking baking urethane for coil coatings enamels and specific for coil coating corrosion protection primers..
HMW 1970	40 in S1/E5	3.500 – 4.500	0 - 4	67	15000	7	High molecular weight polyester resin, flexibility, adhesion on HDG and aluminium, corrosion resistance**, conform to FDA approved.**
HMW 1971	50 in S2/F	3.000 – 5.000	0 - 3	67	15000	10	High molecular weight polyester resin, flexibility, adhesion on HDG and aluminium, corrosion resistance.
HMW 1973	40 in S1/E5	3.800 – 4.700	8 - 10	65	20000	7	High molecular weight polyester resin, flexibility, adhesion on HDG and aluminium, corrosion resistance, **conform to FDA approved for interior cans.**
HMW 1974	40 in S1/E5	2.900 – 3.500	0 - 5	42	15000	7	High molecular weight saturated polyester. Good porosity & flexibility
HMW 1976	40 in S1/E5	3.500 – 4.500	0 - 3	40	15000	7	High molecular weight saturated polyester. Good porosity & flexibility and compatibility.
HMW 1978	50 in S1/E5	6.800 – 8.800	0 - 3	20	10000	12	High molecular weight saturated polyester. Good porosity & flexibility. For interior can coatings.
CC 1989	60 in S2/F	6.000 – 8.000	1 - 4	51	5000	23	Linear saturated polyester for primer coating.
CC 2800	60 in S2/G3	4.500 – 5.500	1 - 4	27	6000	20	For the formulation of coil coating top coats and offers flexibility, adhesion on aluminium, good gloss level and outdoor durability.
CC 2802	50 in D/S2	2.400 – 3.200	2 - 5	45	5000	50	High reactive saturated polyester resin specific for can and aerosols coating. 2802 is recom-mended for highly flexible over print varnish and sheet coatings for metal packaging with forming / stamping resistance; stetrilization resistance and special for wet on wet applications.
CC 2804	65 in S2	4.200 – 4.700	1 - 4	23	3000	32	Outdoor durable coil coatings, QUV resistance.
CC 2805	65 in S2/BG	2.600 – 3.600	4 - 8	0	3000	105	High reactive saturated polyester resin specific for high solid; can and coil coating; topcoat with high reactivity and for back coating. **The product complies with the requirements of FDA 21 CFR § 175.300, Part vii polyester.**

VARAPOL; Saturated polyester, solvent-based, solvent-free, industrial coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	Tg [°C]	Mn	OH-Value [mg KOH/g]	Main uses and characteristics
CC 2808	50 in S2/BG	2.000 – 2.800	2 - 5	24	7000	35	Used in can-white base coat, 3-P-Cans and overprint varnish and coil outdoor durable coatings. Offers hardness, flexibility, sterilization resistance, outdoor durability and reactivity.
CC 2831	60 in S2/BG	2.700 – 3.600	2 - 5	25	5000	30	Recommended in combination with hexamethoxymethylol melamine HMMM or isocyanate for coil topcoats, general industry topcoats and also automotive, durable topcoats with weathering resistance, reactivity and flexibility.
CC 2833	55 in S2	3.000 – 4.400	1 - 5	32	6000	20	CC 2833 S2-55 is recommended for coil coating; domestic appliances and indoor use and also for can coating; general purpose and twist off closures with outstanding features of the resin include: deep drawing properties, hardness and drying speed.
CC 2841	60 in S2/G3	1.800 – 2.200	0 - 1	18	4500	28	CC 2841 S2G3-60 is recommended in combination with HMM melamine for coil topcoats (claddings) and offers flexibility/ aging resistance, outdoor durability and cold flex.
CC 2842	60 in S2	14.000 – 18.000	5 - 10	25	5500	25	CC 2842 S2-60 is recommended for tube coating; white base coat and 3-P-Cans & general line. Outstanding features of the resin include: flexibility (deep drawn), flexibility (cold crush) and flexibility (block resistance). **FDA Compliance Binder (EU) 10/2011.**
CC 2844	60 in S2/G3	2.800 – 3.200	0 - 4	19	4000	30	Coil coatings; topcoat (HMMM and isocyanate cure).
CC 2852	60 in S2/F	4.500 – 6.500	4 - 7	23	4500	45	For can coating; white base coat; 3-pice cans and also for general line and gold-laquer for interior /exterior applications with high flexibility and sterilization resistance.
CC 2857	70 in S1/BG	2.700 – 3.400	2 - 5	8	2500	50	High reactive saturated polyester resin specific for high solid; can and coil coating; topcoat with high reactivity and for back coating. **The product complies with the requirements of FDA 21 CFR § 175.300, Part vii polyester**.
CC 2859	50 in S2/BG	2.400 – 3.000	0 - 5	70	5500	47	Interior can coating, aluminium coil and foil for packaging, primers coil architectural. Principal properties**; FDA approved raw materials. (also for alcoholic content).** Good adhesion on aluminium, reactive and hardness / abrasion resistance.
CC 2869	55 in S2/F	6.000 - 7.500	6 - 9	-10	6000	20	For sterilisation resistance can coatings. Offers reactivity and adhesion. Provides flexibility and good gloss level.
HF 2865	75 in S2	6.000 – 7.000	3 - 7	-17	4500	22	Saturated polyester resin for blending to obtain a more flexible coating.
CC 1875	75 in S1/X	2.500 – 4.000	2 - 5	-15	5500	105	For high solid topcoat and back coat coil coating applications.
CC 2806	in S2/BG	1.800 – 3.000	0 - 1	14	3200	40	Outdoor durable coil coatings, QUA resistance.

VARAPOL; Saturated polyester, solvent-based, solvent-free, industrial coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	Tg [°C]	Mn	OH-Value [mg KOH/g]	Main uses and characteristics
E 1800	Solvent-free	25.000 – 36.000	≤ 3	-	-	215	In combination with polyisocyanates, used in flexible two-component polyurethane coatings for wood substrates, parquet and plastics.
E 1805	65 in MPA	17.000 – 23.000	≤ 3	-	-	290	E 1805 MPA-65 is mainly used in combination with aliphatic or aromatic polyisocyanates in two-component coatings with excellent weatherstability, gloss retention, good chemicals and abrasion resistance; primarily for high grade industrial coating.
E 800	Solvent free	70% in MPA 700 – 1000	≤ 3	-	-	285	For air-drying 2K coatings yielding hard, chemically resistant films; high impact resistance, toughness and abrasion resistance; in combination with E 1800 for highly abrasion-resistant floor coatings.
E 1162	Solvent-free	15.000 – 20.000	≤ 3	-	-	43	In certain combinations, e.g. with E 1808, E 1800 the addition of E 1162 increases the toughness and resistance to wear and abrasion of the paint films. Such combinations can be used to coat furniture, floors and parquet.
E 1135	Solvent-free	5.000 – 20.000	≤ 16	-	-	43	The main field of application for E 1135 in combination with Desmodur L or HL - is the furniture sector.
E 1130	75 in xylene	2.000 – 3.000	≤ 16	-	-	93	PU- and nitrocellulose-combi wood finishing.
E 1188	75 in BuAC	3.500 – 5.500	≤ 12	-	-	122	E 1188 can be combined with nitrocellulose to formulate high-quality wood and metal finishes which can be oversprayed without any risk of lifting.
E 1181	75 in MPA	6.800 – 9.000	≤ 12	-	-	158	Polyester polyol. Used as a co-reactant in the formulation of air-drying two-pack coatings for wood such as boats and parquet flooring.
P 1625	75 in X	3500 – 4500	≤ 15	-	-	145-155	For the production of weather- and water-resistant two-component PUR coatings and also high quality 1K-aminoplat coatings.
P 1631	67 in MPA	20.000 – 3.000	≤ 3	-	-	265	Saturated type for air-drying two pack-PU-coatings.
P 1674	80 in BuAc	10.000 – 20.000	≤ 3	-	-	135	For the manufacture of solvent-based, ultra high solids two component PUR systems.
P 1675	78 in BuAc	20.000 – 50.000	≤ 3	-	-	185	For the manufacture of solvent-based ultra high solids two component PUR systems for industrial and car repair coatings with good mechanical properties.
PU 1565	100	3.000 – 4.000	≤ 2	-	-	150-170	A low viscous and solvent-free branched polyol with ester and ether groups and is mainly used for the formulation of solvent-free coatings, sealings and adhesives in combination with modified polyisocynates.
PU 1530	100	2.500 – 3.500	≤ 2	-	-	220-240	A low viscous and solvent-free branched polyol with ester and ether groups and is mainly used for the formulation of solvent-free coatings, sealings and adhesives in combination with modified polyisocynates.
P 1813	100	1.700 – 2.700	≤ 2	-	-	310-350	Low viscous polyester resin, due to its wide compatibility suitable for various systems, e.g. as modifying component for solvent and water-based isocyanate and amino resin crosslinking coatings to improve flexibility, flow, chemical and mechanical resistance and to increase solids content, **corresponds to FDA § 175.300.**
P 1811	100	1.500 – 3.000	≤ 2	-	-	310-350	Low viscous polyester resin, due to its wide compatibility suitable for various systems, e.g. as modifying component for solvent and water-based isocyanate and amino resin crosslinking coatings to improve flexibility, flow, chemical and mechanical resistance and to increase solids content, excellent weather resistance.
P 1677	78 in BuAC	10.000 – 45.000	≤ 2	-	-	257	For chemical resistance two pack PU-systems, is used in chemical resistant two component top coats.

VARAPOL; Liquid modified polyester resins, industrial coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	Tg [°C]	Mn	OH-Value [mg KOH/g]	Description
SC 1890	50% in S2/G3	800 – 1.000	45 - 50	33	3100	35	Acrylic modified saturated polyester for can coating, 2-Pice, B&B. SC 1890 offers adhesion to aluminium and tinplate, acceptance of UV curable printing inks.
SC 1893	65% in S2/G3	7.500 – 8.500	42 - 48	20	2700	17	Acrylic modified saturated polyester for can coating, 2-Pice, B&B.
SE 1901	55% in S2/G3	4.500 – 5.500	3 - 8	-	-	-	Epoxy modified saturated polyester resin for can coatings. Reactivity and adhesion to aluminium and tinplate.
SB 1921	55% in S!/S2/S4	5.000 – 6.500	6 - 10	25	5000	58	Selfcrosslinking saturated polyester resin with blocked isocyanate, for can and tube coatings applications with sterilization resistance; printability and flexibility.
SB 1950	60% in S2/S1/G3	2.600 – 3.100	0 - 4	9	4000	32	Saturated polyester with blocked isocyanate for topcoat and primer.
SQ 1871	60% in F/B	50 – 1.500	2 - 6	-	-	35	Silicon modified saturated polyester resin, good exterior durable coil coatings (if mixed with compatible polyester resin). Used in high quality, long life, industrial finishes, light armature finishes and good exterior durable coil coatings (if mixed with (compatible) regular polyester resins). Offers adhesion, yellowing resistance and outdoor durability.

Thoughts on Waterborne Industrial Coatings

VARALITE; Saturated polyester, water-based, industrial coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	OH-Value [mg KOH/g]	Description
P 1091	80 in butylgylcol	45.000-70.000	45-60	142	Branched saturated polyester resin for waterborne industrial stoving systems.
P 1094	40 Water / butylgylcol (2.1%)	max. 20.000	48-58	122	Branched saturated polyester resin for waterborne industrial stoving primers, fillers and top coats with low VOC. pH=7.5-8.5, very reactive.
P 1808	100	15.000-25.000	max. 25	231	Low viscouse, with high reactivity for amine free water-based stoving paints on metal, aluminium foil, paper and plastics, also suitable for printing inks.
P 1450	90 in water	500-700	max. 15	280	Similar to 1808 but higher reactivity, better stability, higher water tolerance and lower viscosity, also suitable for printing inks.
P 2847	75 in butylglycol	40.000-75.000	45-60	118	For the production of baking primer and top coat of general industrial systems.
P 2840	75 in butylglycol	max. 50.000	45-60	122	For the production of baking primer and top coat of general industrial systems, the binder can be neutralized and in combination with pre-hydrolyzed silane for 1-component stoving glass painting. **G1 (perfume resistance), condensation water and water resistance with subsequent Cross cut,**
P 2777	40 in W/BG	max. 25.000	40-60	118	For the production of baking primer and top coat of general industrial systems.
P 2542	70 in dipropylenglycol	max. 15.000	45 – 60	142	A reactive polyester resin for the manufacture of water thinnable stoving primers and top coats.

VARALITE; Saturated polyester, water-based, industrial coatings

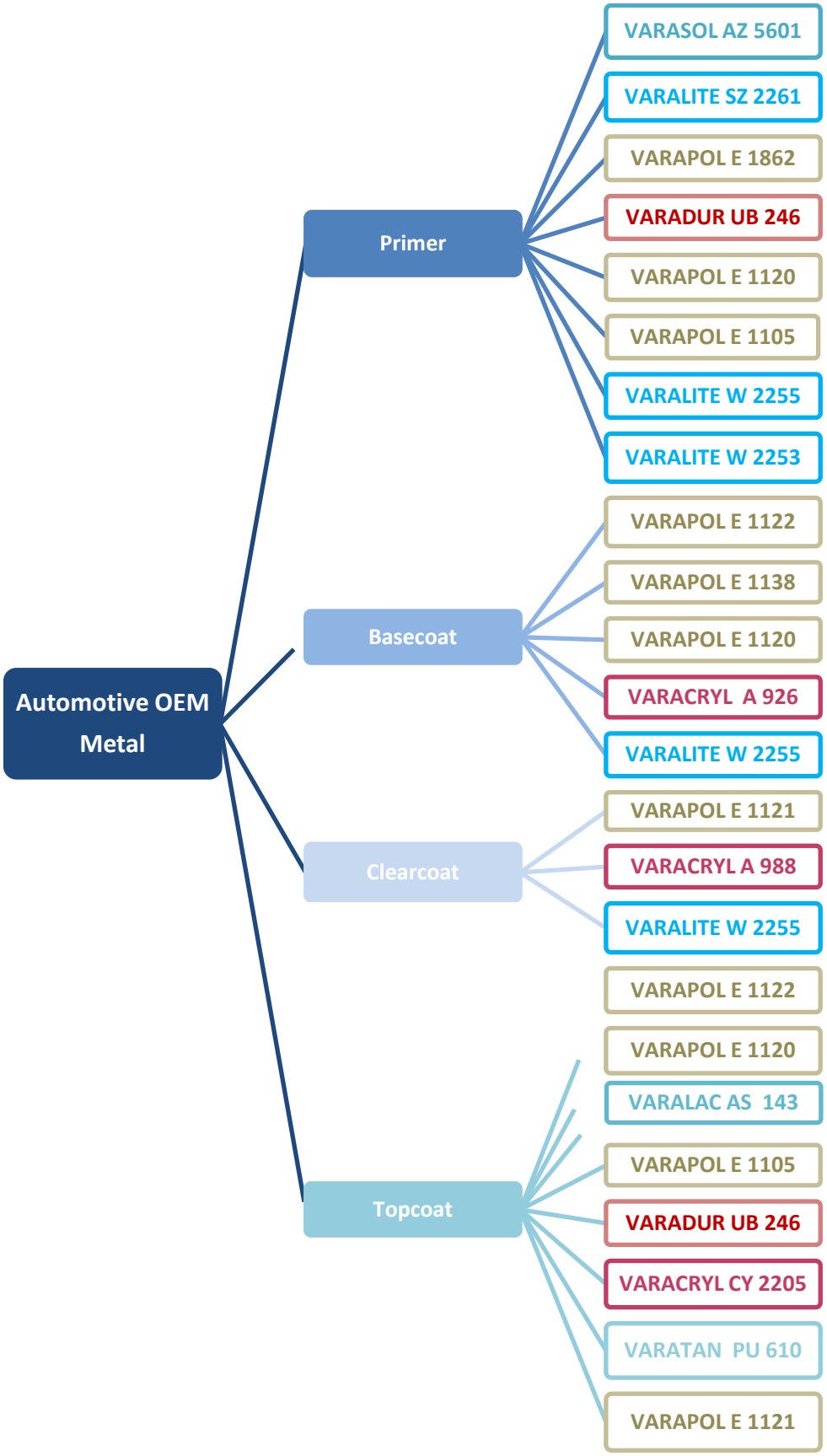
Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	Tg [°C]	Mn	OH-Value [mg KOH/g]	Main uses and characteristics
W 2250	M-40	2.000 – 9.000	50 - 55	31	3000	40	Acrylic modified, water-borne saturated polyester, used in water dilutable can coating, white basecoat for beer and beverage cans and coil primers. Offer flexibility and physical drying.
W 2251	70 in water / butylglycol	2.700 – 3.500	50-58	-	-	100	Automotive coatings, 1 K-primers.
W 2253	50 in butlyglycol / water	900 – 1.400	45 - 50	-10	900	105	Can coating, interior/exterior coatings.
W 2255	65 in butylglycol / water	7.500 –17.500	40-60	0	-	115	General industry, stoving enamels for interior and exterior use primers and topcoats and automotive coatings; primer surfacer, clearcoat and topcoat., gloss level, flexibility, outdoor durability and stone chip resistance.
W 2257	75 in butlyglycol	20.000-30.000	40-60	-	-	60	Water thinnable saturated polyester resin for stoving industrial enamels for interior and exterior use and can coatings, can be used for spray coatings on items that are intended for indoor or outdoor use, offers adhesion to aluminium and phosphated steel with outdoor durability and overbake resistance.
W 2258	70 in butylglycol	10.000-25.000	51 - 58	30	4000	120	Can coatings.
W 2259	68 in water / DMEA	2.700 – 3.500	45 - 50	33	3100	115	Water-borne saturated polyester for top coats and primers., overback resistance, adhesion to aluminium and phosphated steel with outdoor durability and overbake resistance.
W 2260	65 in butylgylcol	7.000–11.000	57 - 63	21	3000	40	Acrylic modified waterdilutable saturated polyester resin for water dilutable resin for can and coil coatings, exterior white basecoat and overprint varnish for beer and beverage cans and coil coating primer with flexibility, reactivity and good physical drying.
W 2261	65 in water / butylglycol / dimethyl ethanol amine	10.000-25.000	40-50	8	-	115	Acrylic modified waterdilutable saturated polyester resin for water dilutable resin for stoving enamels for interior and exterior use, gloss level, flexibility and outdoor durability.
W 2270	80 in butylgylcol	45.000-70.000	50 - 55	31	3000	40	Acrylic modified, water-borne saturated polyester for topcoat and primers.
W 2254	50 in butlyglycol / water	7.000–11.000	50 - 55	30	3000	40	Acrylic modified, water-borne saturated polyester for topcoat and primers.

HIGH-QUALITY
RESINS FOR AUTOMOTIVE & TRANSPORTATION

Saturated polyester, solvent-based, solvent-free, for automotive metal & plastic coatings

Our additives and resins enable the use of high-performance, low-VOC waterborne, solventborne, and high solids automotive OEM coatings by optimizing the automotive coating formulation, application process, and final coating system, thus improving coating performance and environmental friendliness while reducing cost.

Our products provide benefits to all layers of automotive OEM coatings: primer/surfacer, base coat, and clear coat.



AUTOMOTIVE COATING

VARAPOL; Saturated polyester, solvent-based, solvent-free, automotive coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	OH / Solid [%]	Description	Primer	Basecoat	Clearcoat	Topcoat	1K	2K
E 1068	60 in X	2.250 – 3.250	3.0	Air-drying automotive	X	X		X		X
E 1105	70 in X	3.000 – 4.000	2.6	For clearcoat and top coat with excellent adhesion to steel and aluminium and offers high solid content with outdoor durability.			X	X	X	
E 1108	60 in X/BGA	500-900	3,0	2K-PU-Systems, low viscose, high solid, goos adhesion and flexibility.	X			X		X
E 1120	70 in X	4.000 – 6.000	2.4	1K-stoving primers, topcoat and basecoat for Automotive OEM and railway.	X	X		X	X	
E 1121	72 in S1/X	4.500 – 5 800	4.0	Automotive OEM clear coats with excellent UV- and chemical resistance			X	X	X	
E 1122	70 in S1	6 000 – 8.000	2.5	Solid color topcoats specific for 1K-stoving primers, top coat and basecoat for automotive OEM and 2K-PU auto refinish and plastic coatings.	X	X		X	X	X
E 1130	75 in X	2.000 – 3.000	3.1	Two-component air dyring PU-Systems, car refinishing and 1K- OEM.	X	X		X	X	X
E 1138	65 in X	600 – 1.100	2.5	Automotive OEM base coats.		X			X	
E 1805	65 in MPA	17.000-23.000	8.8	Excellent weather stability, lightfastness, gloss retention, good chemicals and abrasion resistance			X	X		X
E 1862	70 in S1/F	3.000 – 6.000	2.8	Automotive primer surfacers.	X				X	
E 1828	80 in BuAC	3.500 – 5.500	5.2	Automotive OEM and repair coatings. In combinations with polyisocyanates very good chemical and weather resistance and excellent low temperature flexibility will be achieved.			X	X		X
E 1870	80 in BuAC	2.600 – 3.400	4.5	Air and forced drying ultra high-solid two-component polyurethane systems for industrial and automotive repair coatings.			X	X		X
E 3802	100	3.000– 10.000	3.0	For flexible 2-component NCO-curing systems.	X			X		X
E 2549	75 in BuAC	2.000 – 5.000	4.4	Higher solids, high durability, no loss of gloss and no yellowing in QUV.	X		X	X	X	X
E 1140	100	4.000 – 7.000	1.7	A linear, solvent free polyester containing hydroxyl groups in the formulation of flexible PU coatings.			X	X		X
E 1162	100	15.000-20.000	1.3	The flexibilizing component				X		X

VARAPOL; Saturated polyester, solvent-based, solvent-free, automotive coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	OH / Solid [%]	Description	Primer	Basecoat	Clearcoat	Topcoat	1K	2K
E 1125	81 in BuAC	9.000-13.000	5.0	It is therefore particularly suitable for the formulation of anti corrosive primers for industrial use, finishes for agricultural machinery.	X			X	X	X
E 1135	100 75 X 75 BuAC	5.000-20.000	5.0	Excellent wetting properties, good compatibility. In combination with aliphatic or aromatic polyisocyanates, air- and stove-drying two-component coatings with good weathering resistance.	X			X	X	X
E 1180	100	18.000-23.000	2.2	In combination with Desmodur for the production of highly flexible 2-K adhesives for glossy foil lamination and for softfeel coatings, high flexibility.	X		X	X		X
E 1181	81 in BuAC	2.200 – 3.800	6.0	Low molecular linear polyester polyol resin, for the formulation of 2-K-PU for high build coatings.		X	X	X		X
FS 1300	100	2.500 – 4.500	4.7	Polyester-polyehther polyol, for 2-K coatings and castings. Automotive refinish, underbody, plastic coatings with excellent chemical resistance.	X		X	X		X
AB 1733	90 in X	2.000 – 2.400	-	Used in heavy duty top coats for metal, marine; protective paints and concrete and masonry paints and reinforced polyester coatings. Offers good gloss level, solvent and water resistance, solids content, flexibility and hardness.	X			X	X	

VARAPOL; Modified polyester, solvent-based, solvent-free, automotive coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	OH / Solid [%]	Description	Primer	Basecoat	Clearcoat	Topcoat	1K	2K
SC 1891	65 in X/E	3.000 – 5.000	207	Acrylic modified polyester, offers reactivity and adhesion			X	X	X	X
PU 841	95 in X	12.000-16.000	180	Ultra high solid normal and forced-drying, two-component polyurethane systems. Adhesion on metal and plastics with flexibility and outdoor durability.	X		X	X		X
PU 846	100	800 – 1.100	235	Polyester for 2-component polyurethane coatings, high gloss, UV light and heat resistance, weathering resistance	X		X	X		X
PE 1423	78 in BuAC	10.000-45.000	257	Polyester for 2-component polyurethane coatings, high gloss, UV light and heat resistance, weathering and chemical resistance.				X		X
W 2341	Solvent free	< 1000	198	A saturated, aliphatic, extremely low viscosity polyester resin for the modification of 2K primers, single-coat and topcoats.	X	X		X		X
P 1625	75 in BuAC	3500 – 4500	145	2K-PU and 1K-aminoplast. Extremly good outdoor durability, no loss of gloss and no yellowing.			X	X	X	X

VARALITE; Saturated polyester, water-based, automotive coatings

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Acid Value [mgKOH/g]	OH-Value [mg KOH/g]	Description
P 1091	80 in butylgylcol	45.000-70.000	45-60	142	Branched saturated polyester resin for waterborne industrial, automotive stoving systems.
P 1094	40 Water / butylgylcol (2.1%)	max. 20.000	48-58	122	Branched saturated polyester resin for waterborne industrial stoving primers, fillers and top coats with low VOC. pH=7.5-8.5, very reactive.
W 2251	70 in water / butylglycol	2.700 – 3.500	50-58	100	Automotive coatings, 1 K-primers.
W 2255	65 in butylglycol / water	7.500 –17.500	40-60	115	General industry, stoving enamels for interior and exterior use primers and topcoats and automotive coatings; primer surfacer, clearcoat and topcoat., gloss level, flexibility, outdoor durability and stone chip resistance.
W 2259	68 in water / DMEA	2.700 – 3.500	45 - 50	115	Water-borne saturated polyester for top coats and primers., overback resistance, adhesion to aluminium and phosphated steel with outdoor durability and overbake resistance.
W 2260	65 in butylgylcol	7.000–11.000	57 - 63	40	Acrylic modified waterdilutable saturated polyester resin for water dilutable resin for can and coil coatings, exterior white basecoat and overprint varnish for beer and beverage cans and coil coating primer with flexibility, reactivity and good physical drying.
W 2261	65 in water / butylglycol / dimethyl ethanol amine	10.000-25.000	40-50	115	Acrylic modified waterdilutable saturated polyester resin for water dilutable resin for stoving enamels for interior and exterior use, gloss level, flexibility and outdoor durability.
W 2270	80 in butylgylcol	45.000-70.000	50 - 55	40	Acrylic modified, water-borne saturated polyester for automotive topcoat and primers.
W 2254	50 in butlyglycol / water	7.000–11.000	50 - 55	40	Acrylic modified, water-borne saturated polyester for topcoat and primers.
W 2253	50 in butlyglycol / water	900 – 1.400	45 - 50	105	Automotive coating, interior/exterior coatings.

POLYURETHANE CHEMISTRY

For flexible plastics, coatings must not only protect the plastic substrate, but also be just as elastic. With their tunable flexibility, polyurethanes are an ideal solution.

Most polyurethanes are reactive systems that require curing with the use of a hardener or crosslinker. Yet, some plastics are sensitive to the reactive curing process. For sensitive substrates, it is preferable to use a non-functional or non-reactive flexible polyurethane system that cures via a physical drying process.

VARAFLEX non-functional linear polyurethanes from VARENA are designed for the formulation of flexible, physically drying solventborne primers, basecoats and topcoats for plastics.

The hardness of these coatings is due to interactions between the polymer molecules, rather than through the formation of a crosslinked network. They are very flexible as a result.

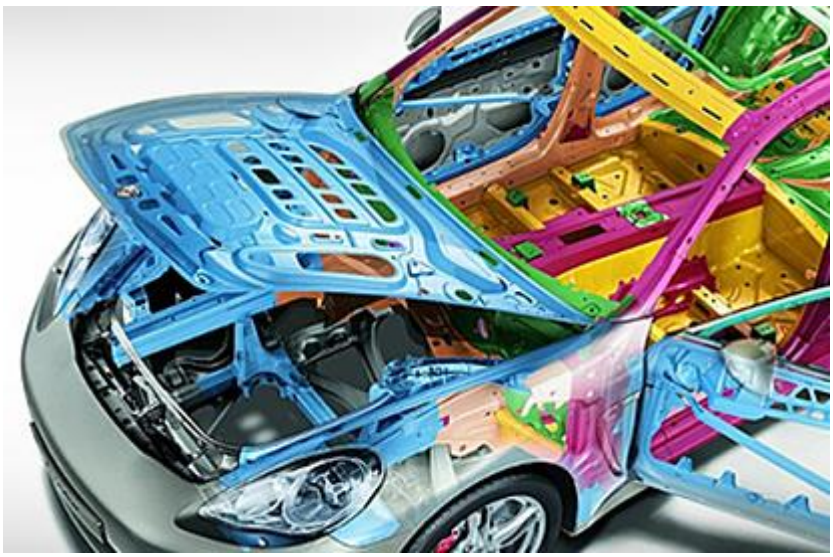
The addition of a polyisocyanate that can undergo a mild crosslinking reaction with moisture in the air once the coating is applied is an effective way to increase the solvent resistance of coatings based on physically drying VARAFLEX binders. Desmodur N 75 (10-20% based on solid resin) is a recommended grade for this purpose.

VARAFLEX non-functional resins are also used as co-resins in coatings applied to other flexible substrates.

PLASTIC COATINGS

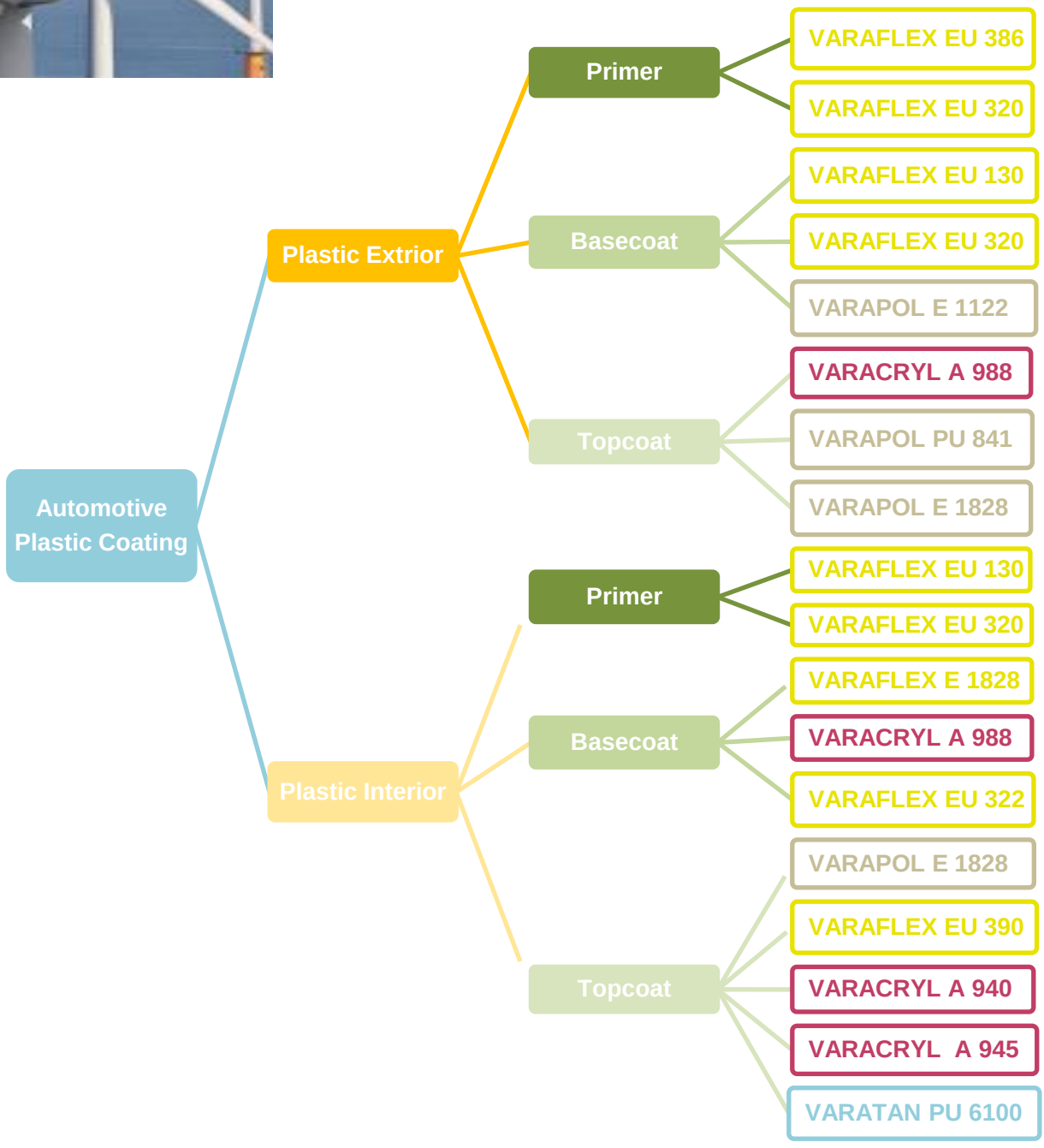
VARAFLEX adheres to all kinds of plastic substrates. Resistance to abrasion, chemicals or light, pigmentability, good compatibility with other systems or flexibility – all these specifications are met efficiently by this VARENA product line, facilitating the formulation of outstanding plastic coatings and primers.

In **Shoe-Sole Coatings VARAFLEX** contributes the necessary flexibility and also promotes adhesion, abrasion resistance and gloss. In artificial-leather applications, VARAFLEX provides the material with protective properties and gloss, while additionally preventing brittleness. In the field of Rigid Plastic, enormous benefits are derived from LOXAFLEX acting as co-binders in polyurethan plastic coatings for plastics, such as **PS, PP, ABS, PMMA, PVC, PUR , PP/EPDM, PA and PC:** our products enable optimum adhesion, including intercoat adhesion, are extremely resistant to chemicals, abrasion and light, and have good pigmentability.



VARA CO SOL
VARENA COATING SOLUTIONS

PU-PLASTIC COATING
Plastics Product Selector



The exterior of a vehicle is a particular challenge to every paint system. Apart from environmental influences such as the weather and chemicals, designers must bear abrasion resistance, stone-chipping and other such factors in mind. We offer complete binder technologies for complete coating, paint and colouring systems for these complex plastics applications.

VARAFLEX; Solvent-borne, 1K- and 2K- urethane elastomer for plastic coating

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Isocynate Modification	Description	Primer	Basecoat	Topcoat	1K	2K
EU 130	30 in M	6.400 – 9.000	Aliphatic	Plastic coatings: clear and pigment dent coatings for PVC, PA, ABS, PUR foam and in mould coatings. Metallic base coats for plastics	X			X	
EU 386	35 in X	700 – 1.200	Aromatic	Flexible primer for PP, PP/ EPDM. Car refinish. Excellent adhesion to common plastics types, brilliant metallic and deep glossy blacks.	X			X	
EU 320	30 in tert.B / BuAC	250 – 650	Aliphatic	Solvent based elastomeric with good adhesion on flexible and rigid substrates. Excellent adhesion, good mechanical properties, can be crosslinked with isocyanates.	X	X		X	X
EU 322	51 in M	4.000 – 6.000	Aliphatic	An aliphatic polyurethane elastomer with reactive hydroxyl groups, which in combination with poly-isocyanate resins, e.g. Tolonate HDB or Desmodur N, provide flexible coating systems with good adhesion to many plastic substrates.	X	X		X	X
EU 390	30 in M	550 – 1.000	Aliphatic	EU 109 is aliphatic polyurethane elastomer for clear and pigmented coatings for PVC, ABS, PUR, Automotive: metallic basecoats for plastics.		X	X	X	
EU 391	30 in IB/X	1.700 – 2.300	Aliphatic	Clear and pigmented coatings for solvent sensitive plastics, PS, ABS, printing inks. Physically drying Automotive metallic base coats for plastics.			X	X	

Elastomer coatings solution that meet the most stringent automotive requirements

VARENA CHEMICAL is a global company in the intermediates, coating, adhesives, inks and composite and solid surface resins, thermoset compounds, gel-coats and niche specialties and specialty additives for coatings and inks.

VARENA CHEMICAL is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market. Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products.

Product innovation is important for the group's business and it's the reason for which it constantly works with customers to find solutions to problems.

Introducing new or improved products ensures that VARENA CHEMICAL continue not only to deliver what the market wants and needs, but also when it is wanted and needed.

WATER-BORNE technology
VARANOVA
PRODUCTS WITH PRESPECTIVE

VARA CO SOL
VARENA COATING SOLUTIONS

THE SPECIALITY SUPPLIER FOR COATINGS; INKS; ADHESIVES & SOLID SURFACE