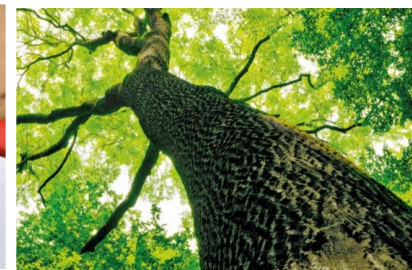


RENEWABLES BASED OFFER 2020



www.allnex.com

allnex
The Coating Resins Company

- Be ECOWISE™ reflects our mindset in acting across various areas of sustainability to develop new products and services and to improve our internal operations
- It underlines our dedication and ambition to pursuing a greener and more sustainable future together with our customers



be ECOWISE™

Where we can make the most impact

We have identified five sustainability areas where allnex can make the most impact and we have defined them as five allnex eco pillars:

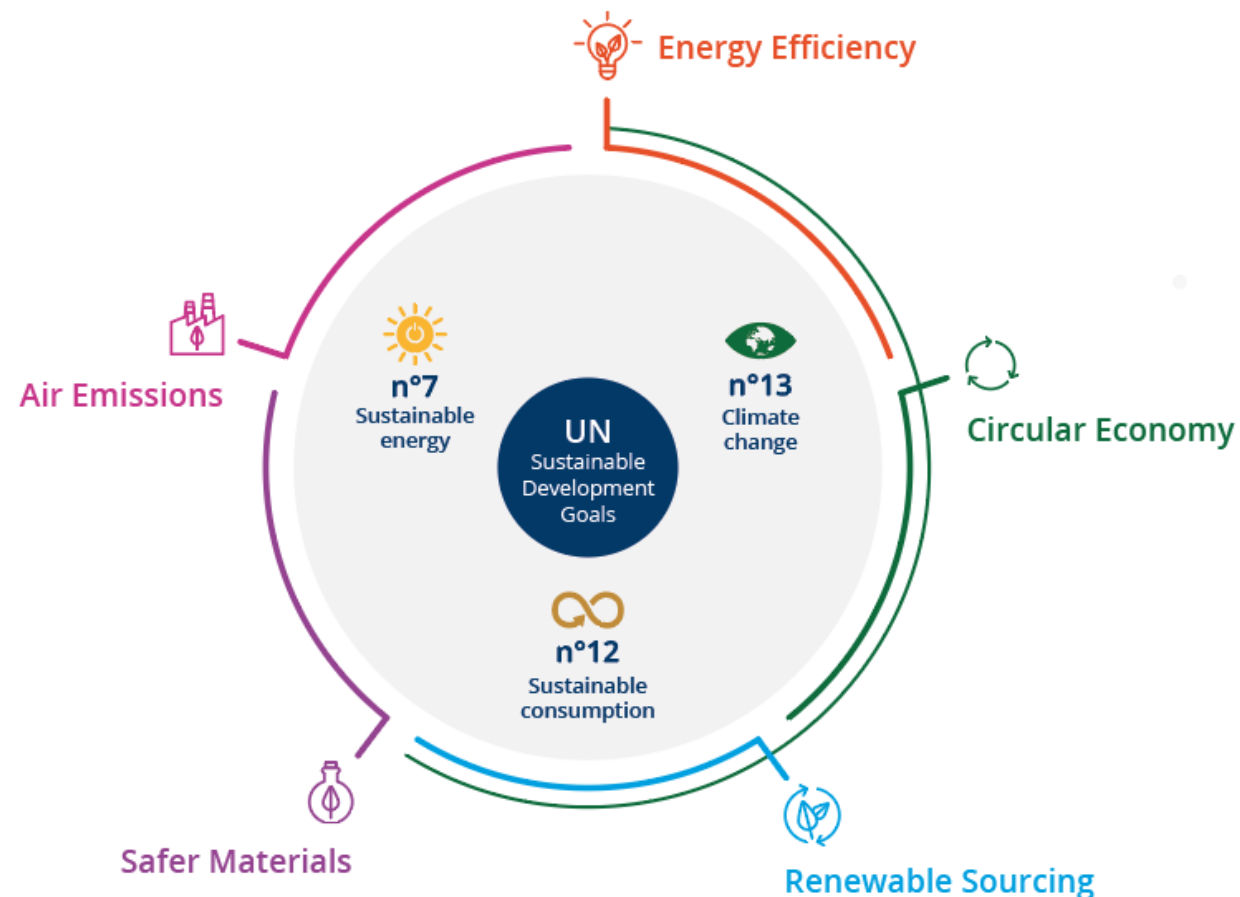
 renewable sourcing

 safer materials

 air emissions

 circular economy

 energy efficiency



Renewables – material trends



EXAMPLES FROM OTHER INDUSTRIES

- PE from renewables
- PEF (Polyethylene Furanoate)
- PET (bio MEG)

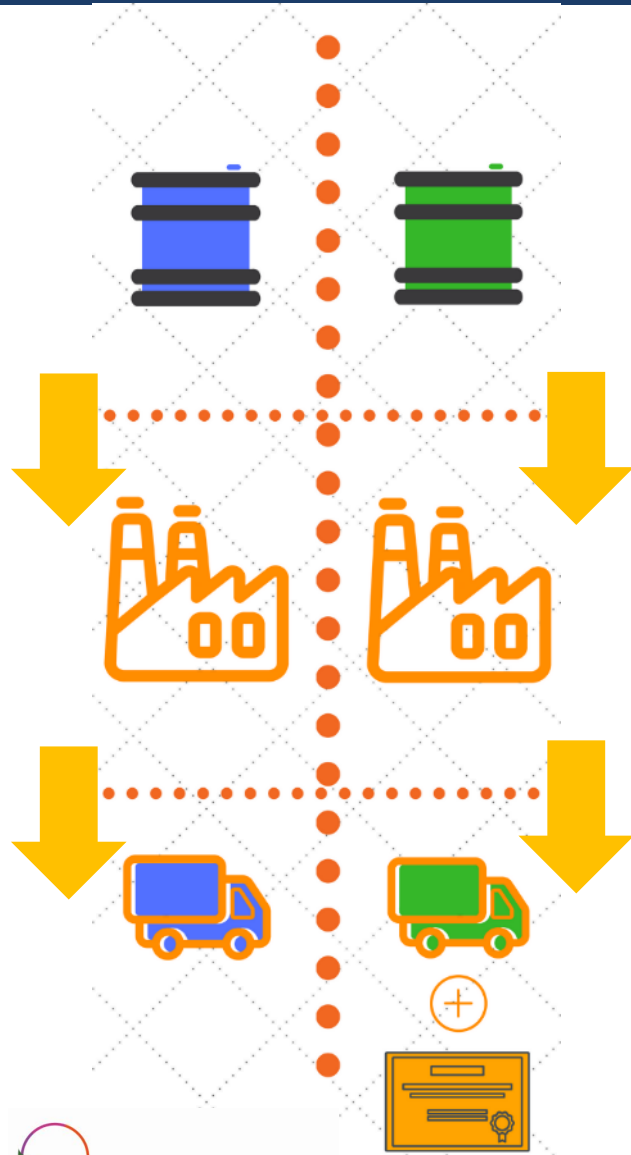
*Pictures from websites of the Coca-Cola company, IKEA and LEGO.

allnex commitment to renewable sourcing



- Going for renewable raw materials is **a strategic choice** for the future. Petrol based natural resources are limited and will become scares.
- The chemical industry is now at a turning point. Renewable raw materials are becoming available in larger quantities and they are becoming more cost competitive.
- allnex is continuously adding products with renewable content.

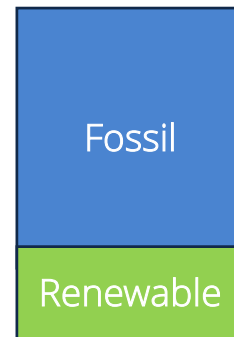
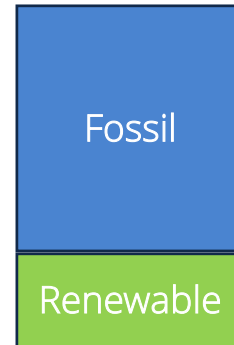
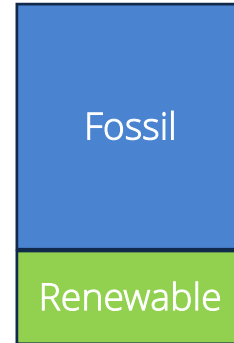
Certification options physical segregation “green carbon in your drum”



Raw materials with different renewable content and certification type are sourced. The amount of biobased raw material is tracked.

Raw materials with ^{14}C certified content follow separated stocking & manufacturing routes so that the ^{14}C can be tracked in the process.

When finished products exit the production the ^{14}C containing grades is shipped with the ^{14}C certification.



Certification options - ^{14}C certification or mass balance



^{14}C Certification

Your drum contains the bio based raw materials

This can be proven with ^{14}C method (ASTM)

But could lead to doubling of stock and manufacturing streams

Mass Balance Approach

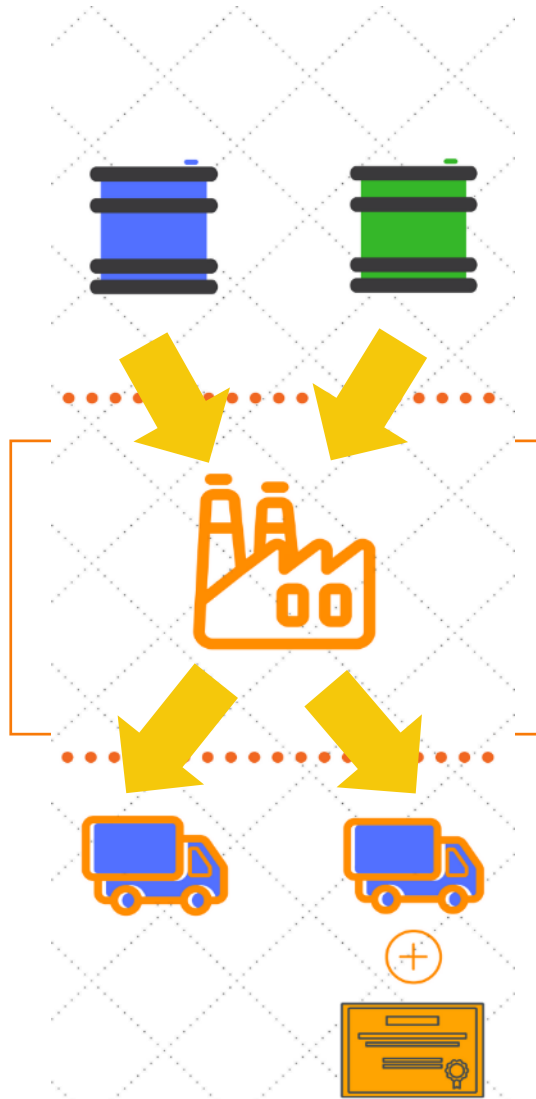
The “Green electricity” model

My drums may not contain biocarbon, but I get the certificate

How?

Accounting system tracking the renewable raw materials

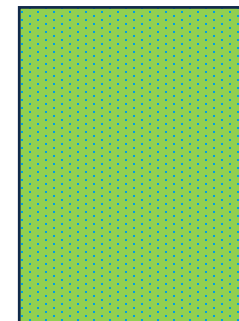
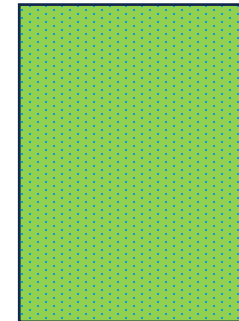
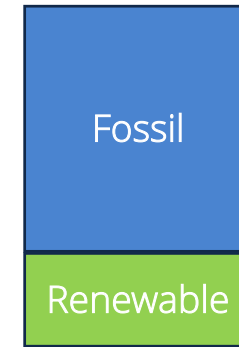
Certification options the alternative “bio-mass balance certification”



Raw materials with different renewable content are sourced. The mass balance of the renewable component entering the tanks is tracked

Raw materials with different renewable content can be mixed in stocking or in the resin production process.

When finished products exit the production the renewable mass is allocated to selected mass-balance certified grades.



Certification options mass balance or ^{14}C certification?

Bio-Mass Balance Certification

- Biomass-derived with 3rd party certification
- One material stock and manufacturing stream
- Faster availability at production scale
- Often additional cost for renewable feedstock

^{14}C Certification

- Bio based analysed by ^{14}C method
- Doubling of stock and manufacturing streams
- CAPEX needed-longer time to achieve production scale
- Often additional cost for renewable feedstock

Total amount of bio based raw material
Impact on the environment

Certification options

examples of (mass balance) certifications

- Adopted in the chemical industry as viable first step to support shift of industry to bio based materials.
- Already implemented in various industries via independent certifications systems.



Danish milk producer ARLA informs their customers about the sustainable packaging of their milk

<https://www.iscc-system.org/iscc-plus-logo-on-arla-milk-cartons/>

Conclusion



- allnex has made the choice to go for renewable raw materials as **a strategic choice** for the future.
- allnex is continuously adding products with renewable content to provide a complete toolbox.
- For some products will be offered using the mass balance approach as a temporary situation to minimize costs and speed up the transition towards a more sustainable future.

Drop in or different product performance?
Required Bio-based % level ?
Bio Mass Balance or ^{14}C certification?

RENEWABLE RESINS

be ECOWISE™



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Product	Functionality	Viscosity cP @ 25 °C	Renewable Raw Material (wt%) 1)	Naturally Derived Carbon (%) 2)	Application	Product Description
EBECRYL® 242	2	21000	30	23	Industrial Coatings	Flexible coating for metal substrates, good adhesion and excellent flexibility.
EBECRYL 450	6	8600	30	35	Flexo inks	Polyester acrylate which gives excellent pigment wetting and high reactivity.
EBECRYL 452	4	600	24	29	Flexo inks	Polyester acrylate with excellent pigment wetting; enables the production of high concentrated pastes, increasing productivity and process flexibility.
EBECRYL 657	4	125000	42	52	Offset inks	Polyester acrylate with good pigment wetting, ink water balance and misting properties.
EBECRYL 767	1	175000	30	23	Industrial Coatings	Excellent primer for difficult substrates.
EBECRYL 820	6	550	20	25	Flexo inks for indirect food contact packaging	Low migration product; exceptional pigment wetting allows preparation of highly concentrated pigment pastes.
EBECRYL 846	6	45000	15	17	High speed Offset inks	Polyester acrylate which gives high reactivity and low misting.
EBECRYL 870	6	48000	25	30	Offset inks	Polyester acrylate which gives excellent pigment wetting and high reactivity. Good litho behavior.
EBECRYL 1300	1	10000	70	54	Packaging Coatings and inks	Good adhesion promoting properties. Excellent flexibility, high gloss and light color.
EBECRYL 3608	2	70000	7	16	Inks	Fatty acid modified epoxy acrylate recommended for ink formulations where improved pigment wetting is demanded.
EBECRYL 3702	2	900000	16	16	Litho inks	Fatty acid modified epoxy acrylate recommended for ink formulations, good litho behavior and very good pigment wetting.
EBECRYL 4491	2	60000	20	14	Industrial Coatings	Elastomeric grade, extremely flexible, elongation at break over 250%. For temporary protective coatings, improves elasticity in combination with hard resins.
EBECRYL 4683	2 + 1	50000	35	27	Industrial Coatings	extremely tough. Low shrinkage during curing, good adhesion to plastic and metal, outdoor resistance.
EBECRYL 5848	3	25000	65	74	Litho inks	Epoxidized Soya Oil Acrylate. BPA-free product. Good for Hot foil stamping.
EBECRYL 5850	2	5000	56	60	Litho inks	High reactivity and high Tg; can be used for BPA-free development in Graphics and Wood Applications.
EBECRYL LEO 10801	6	45000	24	30	Inks for indirect food contact packaging	Hexfunctional polyester acrylate oligomer that provides high reactivity and the proper ink-water balance necessary for good lithographic printing.
IBOA	1	10	65	77	Graphics/Industrial Coatings	Monomer with high diluting power, recommended where flexibility and high Tg need to be combined.
OTA 480	3	90	19	13	All	It exhibits low viscosity and good flexibility for a triacrylate and its high functionality contributes to good reactivity and hardness.
RAYLOK® 1622	3	520	21	23	Clearcoat for wood	Low viscosity natural oil modified oligomeracrylate. It gives a transparent oil-like natural and warm aspect.
Waterborne Products						
UCECOAT® 7999	n/a	<200	20	22	Industrial Coatings	High-performance tin-free and low-MFFT aqueous binder for clear and white pigmented coating on wood. The cured coating develops an immediate optimum hardness not requiring oxidative drying.
Only available using mass balance 3						
EBECRYL 600	2	3000 @ 60°C	23	22	Graphics/Industrial Coatings	Exhibit high reactivity, surface hardness and gloss and the excellent solvent resistance typical of an epoxy resin.
EBECRYL 3700	2	4300 @ 60°C	23	22	Graphics/Industrial Coatings	Exhibit high reactivity, surface hardness and gloss and the excellent solvent resistance typical of an epoxy resin.
EBECRYL 3700/180T	2 + 3	85000	22	20	Graphics/Industrial Coatings	This resin is characterized by its low odor, light color, low irritancy and very fast cure response.

1) Renewable Raw Materials (wt %): The amount of raw materials from renewable sources that is used to produce the finished product. This is a calculated value.

2) Naturally Derived Carbon (%): This is the amount of renewable carbon compared to the total amount of carbon in the finished product. It is measured by ASTM D6866 using C¹⁴ isotope analysis.

3) For products only available using mass balance the natural derived carbon measurable content cannot be guaranteed.

Liquid Resins



Product	Application	% Bio-based on resin solids	% Bio-based on delivery form	Performance characteristics
Water borne Alkyd Resins				
RESYDROL® AF 502w/35WA	Monocoat, topcoat stoving	45% - 55%		High body, no organic co-solvent, pigment wetting.
RESYDROL AM 420w/66BPWA	Primer, topcoat, monocoat stoving	30% - 35%		Adhesion, balanced hardness and flexibility, corrosion resistance.
RESYDROL AX 237w/70BG	Primer, Air drying	25% - 30%		Humidity and Corrosion resistance. High gloss. Easy application.
RESYDROL AX 246w/70BG	Primer stoving	15% - 20%		Dipping paints. Combined with CYMEL® 303 LF - offers corrosion resistance.
RESYDROL AX 247w/70BGMP	Stoving coatings	15% - 20%		Electrical insulation paints.
RESYDROL AX 250w/75EP	Primer stoving	15% - 20%		Dipping paints. Combined with CYMEL 303 LF - offers corrosion resistance.
RESYDROL AY 466w/38WA	Topcoat, air drying	40% - 45%		Humidity resistance. High gloss. Fast drying.
RESYDROL AY 586w/45WA	Wood external stain	55% - 65%		Adhesion and penetration on wood, open time and durability.
RESYDROL AY 6150w/45WA	Primer, topcoat, monocoat, air drying	30% - 40%		Humidity and corrosion resistance. High gloss. Easy application.
RESYDROL AY 6705w/44WA	Wood external stain	35% - 40%		Durability, fast drying, suitable for vertical and horizontal wood applications.
RESYDROL AZ 6191w/42WA	Metal, wood internal & external trim	40% - 45%		Suitable for wood and metal applications, gloss, flow, leveling and chemical resistance, durability.
RESYDROL AZ 6710w/41WA	Wood external stain	30% - 35%		Very hard, quick drying grade for wood applications, mostly used as a blending resin.
RESYDROL AZ 6711w/40WA	Wood external stain	40% - 50%		Very hard, quick drying grade for wood applications, mostly used as a blending resin.
RESYDROL VAF 6111w/60WA	Interior wall paint	35% - 45%		Blending partner for acrylic applications to improve adhesion and applicability with low yellowing.
RESYDROL VAL 5547w	Wood impregnation	70% - 80%		Penetration on wood, low grain rising and oil feeling application.
RESYDROL VAY 6096w/39WA	Topcoat, air drying	25% - 35%		Humidity resistance. Fast drying.
SETAQUA® 6006	Industrial wood, primer, topcoat, air drying	45% - 55%		Fast drying, wood penetration and corrosion resistance.
SETAQUA 6004 YA	Industrial wood, primer, topcoat, air drying	70% - 80%		Fast drying, wood penetration, Water borne and yellowing resistance.
Waterborne Acrylic Resins				
RESYDROL® SF 8000/50WA	Interior trim	5% - 10%		Drier free, good brushability, nice body, flow and leveling, ADH and surfactant free.
RESYDROL SF 8010/50WA	Wood external stain	0% - 10%		Fast drying, drier free, excellent durability, no peeling, flaking or grain rising, ADH and surfactant free.
RESYDROL SF 8011/50WA	Wood external stain	0% - 10%		Harder version of RESYDROL SF 8010.
Water borne epoxy dispersions				
BECKOPOX™ EM 2120w/45WA	Monocoat (DTM) air drying	5% - 15%		Anti corrosion performance close to 2K epoxy.
BECKOPOX EP 2384w/57WA	Monocoat (DTM) or primer air drying	15% - 25%		Hardness development, early water resistance.



Product	Application	% Bio-based on resin solids		% Bio-based on delivery form	Performance characteristics
Solvent borne alkyd resins					
SETAL® 62 EHV SM-60	Primer, monocoats, air drying	65% - 70%		35% - 45%	Fast drying, hardness.
SETAL 84 XX-70	Primer, stoving	10% - 15%		5% - 15%	Appearance, durability.
SETAL 118 XX-60	Wood acid cure, primer, stoving	60% - 65%		35% - 40%	Hardness, adhesion, impact resistance, durability, gloss retention.
SETAL 1257 SM-69	Wood external trim	60% - 70%		40% - 45%	Durability and drying, little yellowing.
SETAL 142 XX-60	Primer, air drying	30% - 35%		15% - 25%	Drying, yellowing resistance, adhesion.
SETAL 1601 WS-65	Deco topcoats	40% - 50%		25% - 35%	Outdoor durability, fast drying.
SETAL 196 XX-65	Top coat, airdrying, stoving	45% - 55%		30% - 35%	Fast drying, low yellowing, gloss, gloss retention.
SETAL 270 SM-70	Wood external trim	60% - 70%		40% - 50%	Color retention, brushability, body and flow, durability.
SETAL 293	Wood external trim	80% - 90%		80% - 90%	Brushability, leveling, filling, high gloss, suitable as reactive diluent .
SETAL 304	Wood external trim	75% - 85%		75% - 85%	Drying, durability and pigment dispersion properties.
SETAL 305 SM-90	Wood external trim	75% - 80%		65% - 75%	Drying, durability and pigment dispersion properties.
SETAL 301 SM-83	Wood external trim	65% - 70%		55% - 60%	Durability and drying, minimal yellowing.
SETAL 312 SM-88	Wood external trim	75% - 85%		65% - 75%	Outdoor durability and low yellowing. Large amount of renewable raw materials.
SETAL 321 SM-75	Wood external trim	70% - 75%		45% - 55%	Additive resin to increase solid contentand improve chemical and abrasion resistance. drying and hardness.
SETAL 707 BA-75	Wood acid cure	50% - 55%		35% - 45%	For high-solid acid curing and nitrocellulose systems.
SETAL A F 48 TB/X	Primer, monocoat, topcoat, air drying	45% - 55%		25% - 30%	Broad application, special effect finishes.
SETAL A F 300 SN	Topcoat, stoving	15% - 25%		5% - 15%	Mechanical properties, resistant to acid and waxes.
SETAL A F 310 SN	Topcoat, stoving	15% - 25%		10% - 15%	Reactivity, yellowing resistance, appearance.
SETAL A F 681 TBA	Wood external trim	60% - 70%		45% - 50%	Through-drying and yellowing resistance.
SETAL A U 601 TB	Wood external trim	65% - 70%		30% - 40%	Rapid drying, hardness. High abrasion resistance and long-term flexibility.
SETAL A U 601 HV TBA	Wood external trim	55% - 65%		25% - 35%	Hardness and flexibility, high wear, abrasion and water resistance. resistance to household chemicals.
SETYRENE™ 78 XS-55	Topcoat, air drying	45% - 55%		25% - 30%	Drying, appearance.
Solvent free hydrophobic polyol					
SETATHANE® D 1145	Flooring	65% - 70%		65% - 70%	Tough, hard-wearing, higher chemical resistance.
SETATHANE D 1150	Flooring	70% - 80%		70% - 80%	Tough yet flexible. Hard-wearing and chemical resistant.
SETATHANE D 1160	Flooring	70% - 80%		70% - 80%	Flexibility, lower hardness, retaining mechanical strength, elastomeric nature.
Emulsified hydrophobic polyol					
SETATHANE D E 2656	Flooring	75% - 85%		75% - 85%	Resistance to organic and inorganic acids, alkalis and solvents. Higher flexural strength.
SETATHANE D E 2761	Flooring	65% - 70%		65% - 70%	Resistance to organic and inorganic acids, alkalis and solvents. Thermal shock resistant.
SETATHANE D E 2767	Flooring	20% - 25%		20% - 25%	Resistance to organic and inorganic acids, alkalis and solvents. Can be used for primers.

MORE INFORMATION



For further technical information and inquiries please contact your allnex technical sales representative.

For more information:

<https://allnex.com/en/info-hub/sustainability>

<https://allnex.com/en/product-finder>

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