

ADEKA Chemical Products Index

In responding to customer needs, ADEKA has developed a wide range of products. We are able to supply brochures for any of the products listed below.

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Chemicals

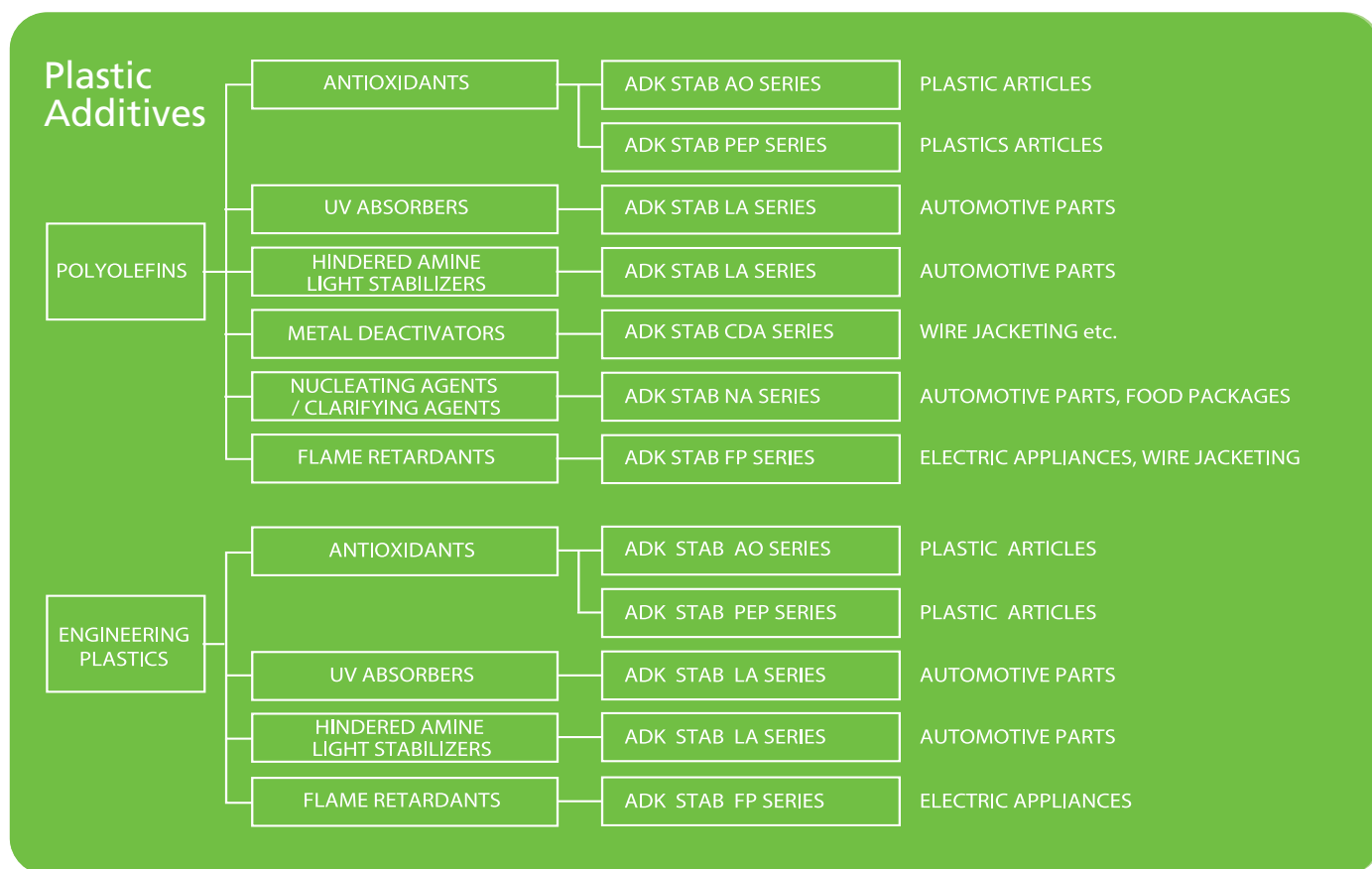
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1

Polymer Additives

Polymer additives are essential material for plastic products, which are the most common and fundamental material for the society.

ADEKA is the 2nd largest polymer additives manufacturer in the world, with a wide variety of products portfolio. Our strength is that we can offer the best solution to each customers from the portfolio, covering from commodity products such as polyolefin antioxidants and PVC stabilizers, to specialty chemicals such as nucleating agents and light stabilizers.



ANTIOXIDANTS



Antioxidants scavenge peroxy radicals and decompose hydroperoxides to prevent thermal degradation of polymers. Combined use of antioxidants and light stabilizers provides protection against photo degradation.

CLASSIFICATION	PRODUCT NAME	APPEARANCE	APPLICATIONS	CHARACTERISTICS
Phenolics	ADK STAB AO series	White powder, white granule	All plastics, elastomers and fibers	Effective antioxidant, excellent synergism with phosphites or thioethers
Phosphites	ADK STAB PEP series	White powder, liquid	All plastics, elastomers and fibers	Provide excellent process and color stability, excellent synergism with phenolics
Thioethers	ADK STAB AO series	White powder, liquid	All plastics and elastomers	Provide excellent long-term thermal stability, excellent synergism with phenolics
Blend type	ADK STAB A series	White powder, white granule	All plastics, elastomers and fibers	Provide excellent heat, process and color stability and simplify manufacturing operations

LIGHT STABILIZERS



There are two types of light stabilizer: Ultraviolet Absorbers (UVA) and Hindered Amine Light Stabilizers (HALS). UVA converts harmful ultraviolet into harmless thermal energy and exerts outstanding effect in preventing photo degradation. Especially, when used in combination with HALS, UVA exhibits synergistic effect, providing polymers with excellent weatherability.

CLASSIFICATION	PRODUCT NAME	APPEARANCE	APPLICATIONS	CHARACTERISTICS
UVA	ADK STAB LA series	Pale yellow powder	All plastics and coatings	Provide excellent light stability, excellent synergism with HALS
HALS	ADK STAB LA series	Powder, liquid	Polyolefins, styrenics, polyamides, coatings and PVC	Provide excellent light stability, excellent synergism with UVA

NUCLEATING AGENTS / CLARIFYING AGENTS



ADK STAB Nucleators/Clarifiers accelerate crystallization process of crystalline polymers and improve mechanical properties and clarity. Also, ADK STAB Nucleators/Clarifiers can shorten processing cycle time and thus improve productivity by enhancing crystallization rate.

Nucleating agents and Clarifying agents enhance crystallization rate, result in improvement of mechanical properties, heat distortion temperature and transparency.

Additionally, they achieve energy saving through shortening of molding cycle time, as they improve the crystallization temperature of the polymers.

CLASSIFICATION	PRODUCT NAME	APPEARANCE	APPLICATIONS	CHARACTERISTICS
Nucleators	ADK STAB NA series	White powder	Polyolefins	Improve stiffness, strength and heat distortion temperature. Enhance crystallization rate
Clarifiers	ADK STAB NA series	White powder	Polyolefins	Improve both clarity and mechanical properties. Enhance crystallization rate.

FLAME RETARDANTS & OTHERS

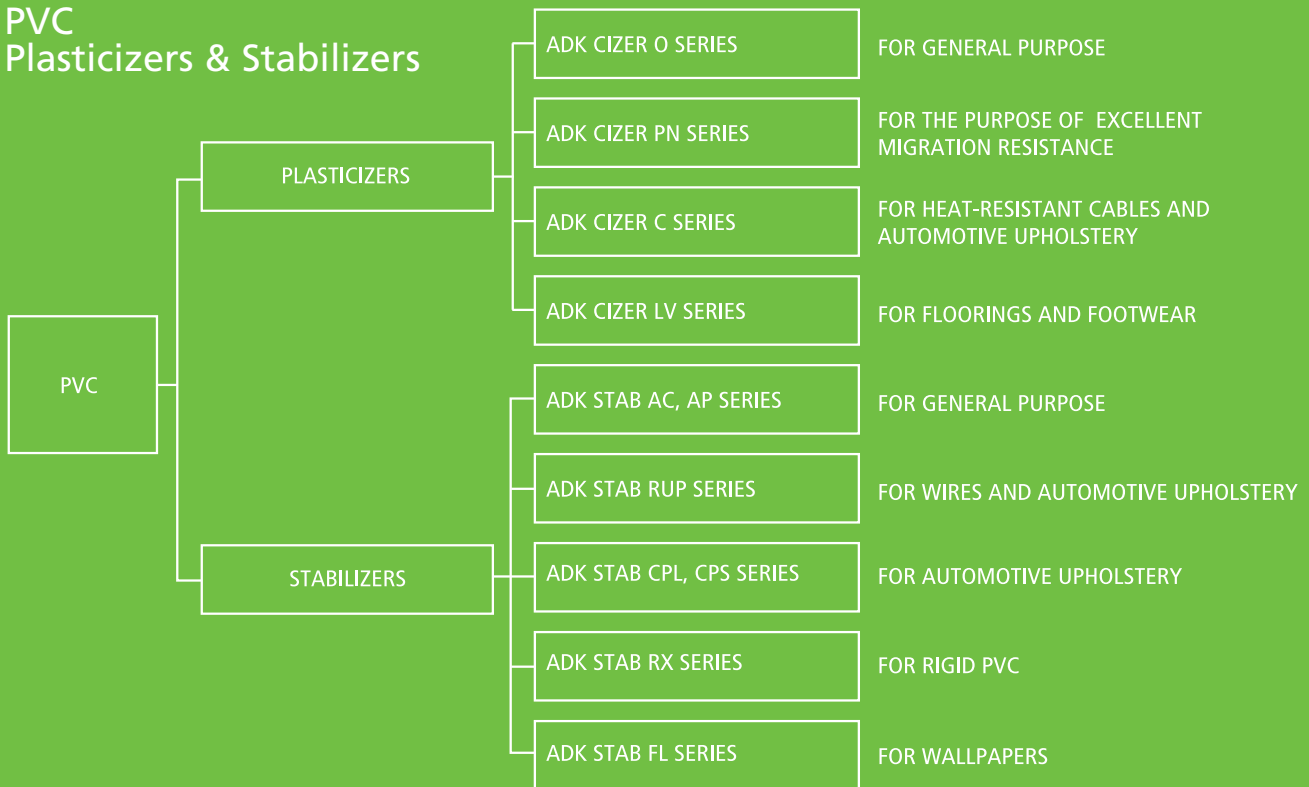


Plastics are used for various applications and therefore require all kinds of properties. Among them is the requirement for flame retardancy which is increasingly needed for plastics used for electronic applications and building materials. ADEKA's flame retardants are all halogen free, therefore have less impact on environment. Additionally, they cause less contamination problem due to their higher heat stability.

Besides, ADEKA has several unique product lines such as Metal Deactivators, Emulsion & Suspension additive systems, etc.

CLASSIFICATION	PRODUCT NAME	APPEARANCE	APPLICATIONS	CHARACTERISTICS
Halogen-free Flame retardants	ADK STAB FP series (Phosphate type)	Pale Yellow Liquid	Engineering Plastics	Provide high level flame retardancy. Low volatility and less deposit.
	ADK STAB FP series (Intumescent type)	White powder	Polyolefins, TPE	Provide high level flame retardancy. Low smoke and excellent heat stability.
Metal Deactivators	ADK STAB ZS series	White powder	All plastics, elastomers and fibers	Provide excellent long-term thermal stability for filled polymers.
	ADK STAB CDA series	White powder	All plastics, elastomers and fibers	Deactivate heavy metals.
Emulsions & Suspensions	ADK STAB LX series	Liquid	ABS, Synthetic rubber latexes and water-borne coatings.	Provide excellent heat or light stability. Have good dispersibility in latexes.

PVC Plasticizers & Stabilizers



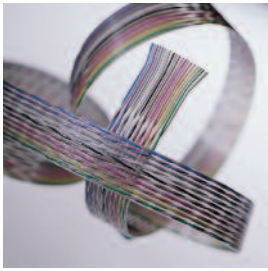
PLASTICIZERS



Plasticizers give useful properties such as flexibility to PVC and rubbers. These properties generally cannot be realized by themselves alone. ADEKA's plasticizers show excellent performance such as low migration to other polymers and heat resistance and so on. We have a variety of plasticizers that surely meet customer's needs.

CLASSIFICATION	PRODUCT NAME	COMPOSITION	CHARACTERISTICS AND APPLICATIONS
Epoxy type plasticizers	ADK CIZER O series	Epoxidized soybean oil, Epoxidized linseed oil	For general purpose
	ADK CIZER D series	Epoxidized monoester	Excellent heat stability
Polymeric	ADK CIZER P series	Adipic acid polyester	Excellent resistance to migration in contact with other plastics
	ADK CIZER PN series	Adipic acid polyester	
Heat resistant plasticizers	ADK CIZER C series	Trimellitate	For heat-resistant cables and automotive upholstery
	ADK CIZER UL series	Pyromellitate	
Antistatic plasticizers	ADK CIZER LV series	Phthalate type Adipate type	For film, sheet, floorings footwear and others
For rubbers	ADK CIZER RS series	Ether-ester	For NBR, CR and acrylic rubbers

STABILIZERS



Though lead stabilizers are still often used for rigid PVC, demands for heavy metal free materials are growing more and more, based on the environment consciousness. ADEKA provides heavy metal free Ca-Zn and Ba-Zn stabilizers that excel in heat stability and molding workability.

CLASSIFICATION	PRODUCT NAME	COMPOSITION	APPEARANCE	CHARACTERISTICS AND APPLICATIONS
General purpose stabilizers	ADK STAB AC series	Ba-Zn	Liquid	Available for transparent applications to CaCO ₃ filled formulations.
	ADK STAB AP series	Ba-Zn	Powder	
Stabilizers for electric wires	ADK STAB RUP series	Ba-Zn	Powder	For wires requiring excellent migration resistance using polyester plasticizer
Stabilizers for automotive upholstery	ADK STAB CPL series		Liquid	Improving of long term heat stability at moderate temperature
	ADK STAB CPS series		Powder	
Heavy metal free stabilizers	ADK STAB RUP series	Ca-Mg-Zn	Powder	For wire and cables, excellent electrical properties and superior heat stability to lead stabilizer
	ADK STAB RX series	Ca-Zn	Powder	For rigid PVC by extrusion, good heat stability as lead stabilizers
	ADK STAB SC series	Ca-Zn	Liquid, Paste	For general purpose, excellent performance as Ba-Zn stabilizers
	ADK STAB SP series	Mg-Zn	Powder	
Stabilizers for PVC foam	ADK STAB OF series	Ba-Zn	Powder	For general purpose
	ADK STAB FL series	Ba-Zn	Liquid	
	ADK STAB BAP series			Cell-control agents for foaming
Stabilizers for dispersion PVC for wall paper	ADK STAB FL series	K-Zn	Liquid	For PVC foam at low expansion for high filler formation
	ADK STAB FL series	Ba-Zn	Liquid	Quick expansion and excellent color (whiteness)
Stabilizers for dispersion PVC for floorings	ADK STAB AC series	Ba-Zn	Liquid	Excellent weatherability and prevent losing transparency in water absorption
Stabilizers for food-approved & Medical applications	ADK STAB SC series	Ca-Zn	Liquid	Excellent initial color and transparency for general plastcized formulation
	ADK STAB 30 series	Ca-Zn	Paste	

Electronics offers people a new world of unlimited dreams. Such products are realized through the best use of cutting-edge technology, materials and devices. They increase convenience and promote comfortable lifestyles. ADEKA technology is making an indispensable contribution to such products. Utilizing synthesizing and refining technology built upon years of research, we are able to supply key materials for them. The future of electronic materials begins with ADEKA.

SEMICONDUCTOR MATERIALS



Evaluation of ALD with 300mm wafer.



ADEKA SUPER TEOS and Dopants are manufactured in clean room (class 1000). We take apart flange of the container and wash inside every time in the clean room. Therefore, we can keep the excellent quality about every product.

These experiences are very useful in producing of MOCVD precursors.

ADEKA produces high-purity etching gases and ALD/CVD precursors for the semiconductor devices. All products are manufactured using leading-edge technologies and under conditions of strict quality control. Also, ADEKA develops new ALD/CVD precursors and plating materials next generation semiconductor.

[Etching gases]

PRODUCT NAME	CHEMICAL FORMULA	APPLICATION
ADEKA HIGH-PURITY Chlorine	Cl ₂	Semiconductor, LCD
ADEKA HIGH-PURITY Hydrogen Bromide	HBr	Semiconductor
ADEKA HIGH-PURITY Boron Trichloride	BCl ₃	Semiconductor

[ALD/CVD Precursors]

PRODUCT NAME	CHEMICAL FORMULA	APPLICATION
ADEKA SUPER TEOS	Si(OC ₂ H ₅) ₄	Dielectric film/Semiconductor
ADEKA HIGH-PURITY TEOP	PO(OC ₂ H ₅) ₃	Dopant/Semiconductor
ADEKA HIGH-PURITY TEB	B(OC ₂ H ₅) ₃	Dopant/Semiconductor
ADEKA HIGH-PURITY TiCl₄	TiCl ₄	Electrode/Semiconductor
ADEKA SUPER TMA	Al(CH ₃) ₃	High-k material/Semiconductor
ADEKA ORCERA TDMAH	Hf[N(CH ₃) ₂] ₄	High-k material/Semiconductor
ADEKA SUPER TEMAZ	Zr[(C ₂ H ₅)(CH ₃)] ₄	High-k material/Semiconductor
ADEKA SUPER OMCTS	[OSi(CH ₃) ₂] ₄	low-k material/Semiconductor
ADEKA SUPER TMCTS	[OSiH(CH ₃)] ₄	low-k material/Semiconductor
ADEKA ORCERA TDMAS	HSi[N(CH ₃) ₂] ₃	SiO ₂ , SiN material/Semiconductor
ADEKA ORCERA SIA-222	Si-amide	SiO ₂ , SiN material/Semiconductor

Other : precursors of Ru, Cu(Electrode, Wire material), High purity organic solvent.

[COPPER PLATING MATERIALS for semiconductor]

TSV electrode (Through silicon via) and copper bump are considered as key technologies for semiconductor devices. We are developing and manufacturing copper plating materials for next generation.

Base solution (VMS)	High purity copper sulfate solution	
Additives	Accelerator	Application of high current density is possible by original composition
	Suppressor	The various surfactants of ADEKA possession are used
	Leveler	It can efficiently plate TSV of a high aspect

[PEROXYGEN CHEMICALS for semiconductor materials]

PRODUCT NAME	GENERAL NAME	APPLICATION
ADEKA SUPER EL	High Purity Hydrogen Peroxide	Water Preparation, Device Fabrication
ADEKA SUPER HP		

[ADEKA AFES SYSTEM (Etching Controllers and Etchants)]

"ADEKA AFES" is an automatic controller that regularly analyzes etching solutions and automatically feeds separately-prepared reactivating agents and water in necessary quantities based on ORP (oxidation-reduction potential), ion index (concentration of free hydrochloric acids) and specific gravity. This offers the user a number of positive outcomes including stable production of fine patterns and marked improvements in yields, etc.

"ADEKA CHELUMICA" is an acidic etching solution prepared by adding certain chemicals to an ADEKA-developed ferric chloride compound. It provides the user with three major merits. Namely, high etching factors, high etching rates and high yields.



"ADEKA AFES SUPER " Controller



Side View



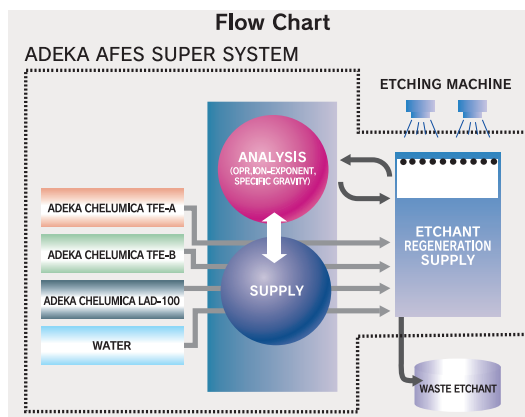
Circuit pitch 50 μm Cross Section

ITEMS	PRODUCT NAME	APPLICATIONS
Controller	ADEKA AFES	Fine etching control system
	ADEKA CHELUMICA FE series	PWB, FPC, TAB, Lead frame (Copper alloy) etchant
Etchants	ADEKA CHELUMICA LF 346	Lead frame (Alloy 42) etchant
	ADEKA CHELUMICA ST series	Chemical milling (Stainless steel) etchant
	ADEKA CHELUMICA LAD 100	PWB, FPC, TAB, Chemical milling (Etchant regenerator)
	ADEKA CHELUMICA ITO, MSE series	ITO etchant (one step etchant, selective etchant)
	ADEKA CHELUMICA W series	Wafer Level CSP etchant
	ADEKA CHELUMICA AL series	RFID and Power Module Substrates. Aluminum etchant.

[ADEKA AFES SUPER SYSTEM (Etching Controllers and Etchants)]

ADEKA AFES SUPER Controller was developed in the Technology that we cultivated in ADEKA CHELUMICA FE series and ADEKA AFES Controller. ADEKA CHELUMICA TFE-Series are an epoch-making and new etchant for fine pattern etching. This new etchant offers a breakthrough in subtractive etching process.

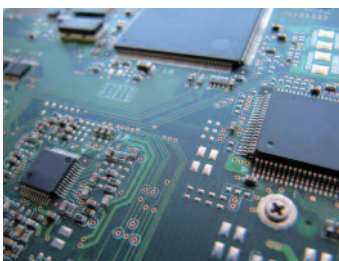
ITEMS	PRODUCT NAME	APPLICATIONS
Controller	ADEKA AFES SUPER	New fine etching control system
Etchants	ADEKA CHELUMICA TFE-3000 series	COF (Copper) etchant
	ADEKA CHELUMICA TFE-5000 series	Package (Copper) etchant



"ADEKA AFES SUPER SYSTEM" can be applied not only to printed circuit board but also to copper substrates including BGA, TAB, FPC, copper alloy for lead frames and nickel alloys and stainless steel for precision parts.

[PEROXYGEN CHEMICALS for circuit materials]

Among our functional products are metal surface treatment agents for electronic components and stabilizers for alkaline hydrogen peroxide solution.



PRODUCT NAME	APPLICATIONS
ADEKA TEC A series	Copper surface treatment. (Micro etchant)
ADEKA TEC CL series	Copper surface treatment. (Micro etchant)
ADEKA TEC S series	Copper surface roughening agent
ADEKA TEC CAP	Copper/copper alloy chemical polishing agent for brass and copper
ADEKA PAOTIZER RA series	Pickling agent for SUS, Regenerator for Ferrous Chloride type Etchant
ADEKA TEC ND series	Cleaning agent for DFR, PSR developing /stripping equipment
ADEKA TEC HES series (Isethionic acid)	Metal Plating Assistant, Metal Finishing Agent, Raw Material of Surfactant

INSULATION MATERIALS for substrate



BUR series have excellent performance for high density package substrate and high thermal conductivity substrate. Our materials enable unique properties which are 200~300°C at Tg, 20ppm/K in CTE, and good process ability for laser drilling and fine pitch.

CLASSIFICATION	PRODUCT NAME	COMPOSITION	APPLICATIONS
DRY FILM TYPE INSULATION MATERIAL	ADEKA FILTERA BUR 2000,5000,6000 series	Thermosetting composite	Low CTE, high Tg, low Ra, low tan δ , low modulus, high thermal conductivity and good adhesion
PREPREG TYPE INSULATION MATERIAL	ADEKA FILTERA BUR 1800 series	Thermosetting composite	Ultra thin, low tan δ , low CTE, high reliability and laser processability

PHOTO (LIGHT) / THERMAL-CURING MATERIALS & PHOTOINITIATORS



Unlike conventional curing, you can obtain an instant cure through the application of ultraviolet radiation to light curing resins. Such processes result in productivity and yield increases. Our no-solvent system products will make a marked contribution to improvements in the workplace in terms of environment, disaster prevention and sanitation.

PRODUCT NAME	COMPONENT/CURING	APPLICATIONS
ADEKA ARKLS KR series	Epoxy resins, UV curing	Coatings, finishing & protective vanishes and primers for substrates such as plastic, metal and paper Adhesives, inks, potting compounds imprint and insulating paints
	Epoxy resins, UV/heat curing	Fixation by adherence and temporary fixers for parts Casting materials and sealing compounds for parts
	Functional UV coating	Scratch resistant, anti-static, high-refractive index stretchable with high hard property
	Epoxy resins, Rapid heat curing	Paints, inks, adhesives and insulating paints Resins for molding, casting and impregnation
	Aromatic sulfonium type photoinitiators	Photoinitiators for cationically curable resins
ADEKA ARKLS NCI series	photo radical initiators	Photoinitiators for display and semiconductor, photo (light) curing materials
ADEKA ARKLS GPA series	latert additives	antioxidant and UVabsorber for photo (light) curing materials

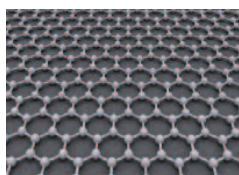
RECORDING MATERIALS



Our recording paper materials enable long-term image retention for thermal paper. Variety of materials ready to serve your needs.

PRODUCT NAME	APPLICATIONS	ADVANTAGES
ADEKA ARKLS DH series	Color stabilizer for thermal paper	Excellent durability

ENERGY RELATED MATERIALS



We are developing the following materials required for energy cycle.

PRODUCT NAME (under development)	APPLICATIONS /	FEATURES
Electrolyte additives for lithium-ion batteries (LiB)	LiB	Prolongment of battery life, Decreasement of resistance
Graphene	Batteries / Additives	Electrical conductivity / Thermal conductivity
Organic dyes for dye-sensitized solar cell (DSSC)	DSSC	Metal-free organic dye / High efficiency, High durability

LOW CHLORINE EPOXY RESINS & LATENT HARDENERS for electrical use

Designing low chlorine type special epoxy resins and latent hardeners, we supply them to customers for electrical use.

These materials enable to realize high performances, such as good adhesion property to non-ferrous metals, Polyimide substrates, and low temp.(80°C) curability.

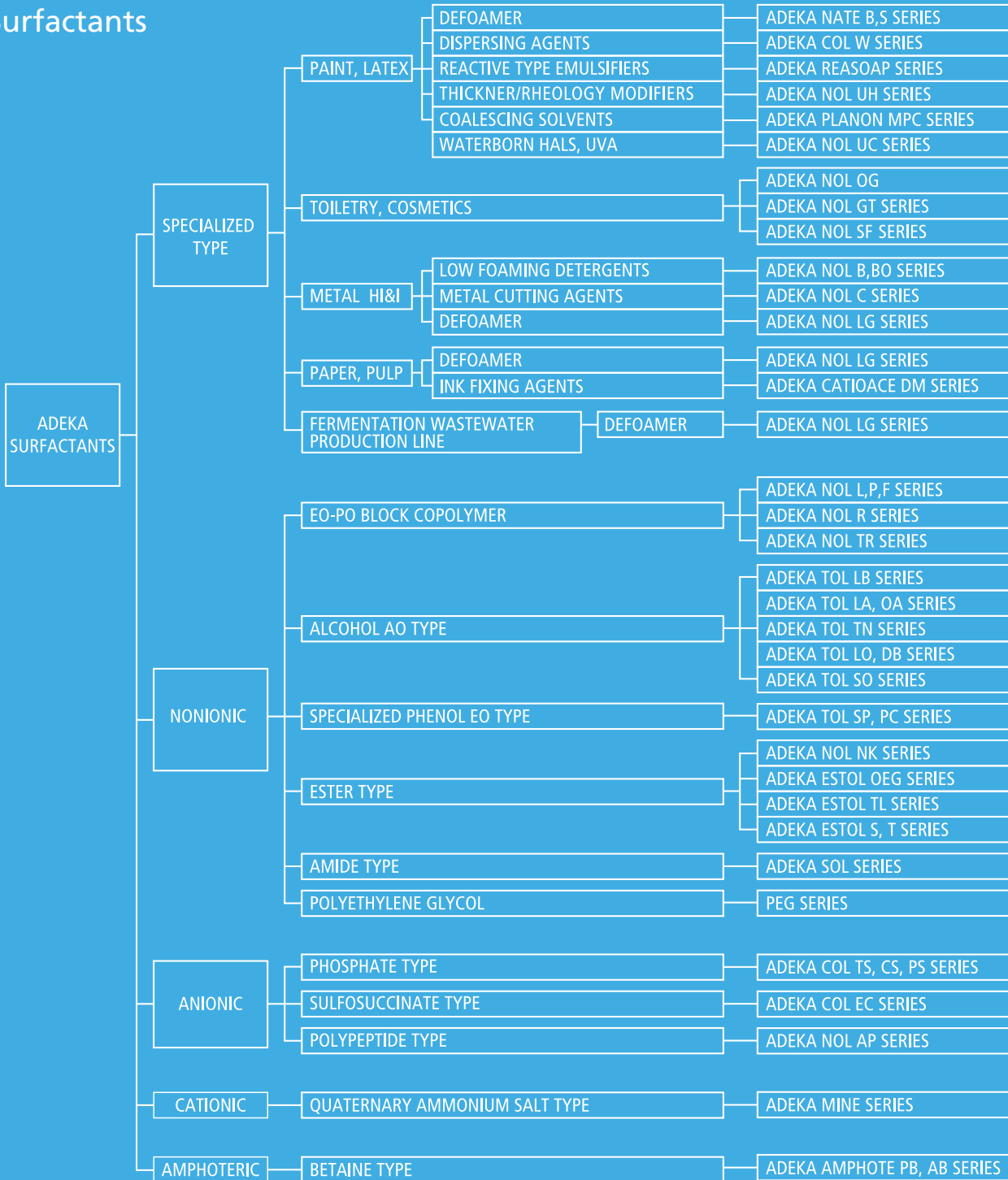
CLASSIFICATION	PRODUCT NAME	COMPOSITION	CHARACTERISTICS
SPECIAL TYPE EPOXY RESIN	ADEKA RESIN EP-4000S, L series	Special structure epoxy resin	Flexibility ,good adhesion property, low chlorine
	ADEKA RESIN EP-4088 series	Special structure epoxy resin	Good adhesion, low viscosity
	ADEKA RESIN EP-3300 series	Special structure epoxy resin	High reactivity
	ADEKA RESIN EP-3950 series	Special structure epoxy resin	High Tg
	ADEKA RESIN EP-49 series	Chelete modified epoxy resin	Good adhesion on non-ferrous metals
	ADEKA RESIN EPR series	Rubber modified epoxy resin	Flexibility good adhesion and thermostability, low chlorine
DILUENTS FOR EPOXY RESIN	ADEKA GLYCIROL ED series	Reactive epoxy diluent	Good dilution effect, low chlorine
EPOXY CURING AGENTS	ADEKA HARDENER EH series	Latent hardener	High Tg, good stability in one component, fast and low-temp. curability

3

Surface Specialties

Our Surface Specialties business supplies the products consisting both of superb functionality and environment-friendly technologies for many fields, and they have greatly contributed to our affluent society. Surfactants have not only high performance but also special features in hypoallergenic, harmless and biodegradability. Those products are commonly-used in the fields of waterborne coating, industrial detergent, cosmetics and electronic industry materials. Lubricants, we supply Organic Molybdenum compounds for engine-oil. Those products provide superior friction modification which improve fuel efficiency, and excellent antioxidation ability which achieve longer drain interval.

Surfactants





SPECIALIZED FUNCTIONAL CHEMICALS

In recent years, our endeavors have focused on more naturally-sourced products that are environmentally sustainable. ADEKA surfactants are used in a wide variety of applications including synthetic detergents, shampoos, coatings and other industrial uses aimed at environmental hygiene and energy/resource conservation.

APPLICATIONS	PRODUCT NAME	COMPOSITION	CHARACTERISTICS / MAIN APPLICATIONS
Defoamer	ADEKA NATE B,S series	Special blend	Good for Foam breaking and Long-lasting effect.
Reactive type emulsifiers	ADEKA REASOAP series	Reactive type (anionic, nonionic)	Reactive type emulsifier for emulsion polymerization
Coalescing solvents	ADEKA PLANON series	Special nonion surfactants	Good film forming property, VOC free
Thickner/Rheology modifiers	ADEKA NOL UH series	Special nonionic polymer derivative	Good Leveling and Flowability. Used for synthetic resin emulsion paints.
Waterborne HALS, UVA	ADEKA NOL UC series	Emulsion	Small particle size. Excellent light stability.
Cosmetics	ADEKA NOL OG	Octanediol	Moisturizer, Preservation booster
	ADEKA NOL GT series	Hydrogelator	Elastic gel, Anti-salt
	BETA-GLUCAN (GENERAL NAME)		Natural moisturizer
	MEVALONOLACTONE (GENERAL NAME)		Natural moisturizer
Softener	ADEKA MINE SF series	Quarternary ammonium salt	Used for Softener. Biodegradable.
Low foaming detergents	ADEKA NOL B, BO series	Special nonionic	Low foaming. Good Detergency, Wetting, Penetration and Alkali stability.
Silicone/Metal cutting auxiliary agents Conditioners for toileteraries	ADEKA NOL C series	Special nonionic	Low foaming. Good lubrication. Water soluble type.



SURFACTANTS

Through untiring R&D, we have incorporated technologies in oils and fats, soaps and synthetic detergents that have resulted in a unique range of surfactants able to be combined with petrochemicals to form raw materials.

CLASSIFICATIONS	PRODUCT NAME	COMPOSITION	CHARACTERISTICS
Nonionic	ADEKA NOL L, P, F, R, TR series	EO/PO block copolymer	Low foaming, Low toxicity,
	ADEKA TOL series	Ethoxylate type	Good Penetration, Wetting, Emulsification, Dispersion, Detergency and Solubilization.
	ADEKA SOL series	Coco-diethanolamide (1:1,1:2 type)	Good detergency. High foaming. Stable foam.
Anionic	ADEKA COL PS, CS, TS series	Phosphate	Good Thermal resistance, Lubrication, Antirust and Antistatic. Stable against Acid and Alkali. Good Detergency, Emulsification and Dispersion.
	ADEKA COL EC series	Dialkyl sulfosuccinate	Good Penetration, Wetting, Emulsification, Dispersion and Detergency.
Cationic	ADEKA MINE series	Quarternary ammonium salt	Good Soften, Anti-static, Emulsification and Dispersion
Amphoteric	ADEKA AMPHOTE series	Betaine type	Good Detergency. High foaming.



LUBRICANTS

When substances come into contact with each other friction occurs. To reduce "friction" as a core theme, we have developed lubricant-related products such as characteristic synthetic lubricant, high-performance additives that can be applied to various uses. Among our products, "ADEKA SAKURA-LUBE" a superior friction reducer, has the top worldwide share among organomolybdenum additives.

CLASSIFICATION	PRODUCT NAME	COMPOSITION	APPLICATIONS
Lubricant additives	ADEKA SAKURA-LUBE series (powder)	Organic Molybdenum compounds	Grease
	ADEKA SAKURA-LUBE series (liquid)	Organic Molybdenum compounds	Engine oil, Gear oil, Industrial oils
Lubricant additives	ADEKA KIKU-LUBE Z series	Zinc dithiophosphate	Engine oil, Grease, Metal working fluid
	ADEKA KIKU-LUBE FM series	Ashless friction modifier	Engine oil, Transmission fluid, Metal working fluid
	ADEKA ECOROYAL AIN series	Anti-oxidants	Engine oil, Gear oil, Industrial oils, Grease
	ADEKA ECOROYAL AWP series	Anti-wear agents	Engine oil, Transmission fluid, Metal working fluid, Grease
Synthetic oils	ADEKA CARPOL series	Polyoxyalkyleneglycols synthetic oils	Hydraulic fluid, Heat media, Lubricant. Metal working fluid
	ADEKA PROVER series	Esters synthetic oils	Engine oil, Heat resistant lubricating oil, Grease

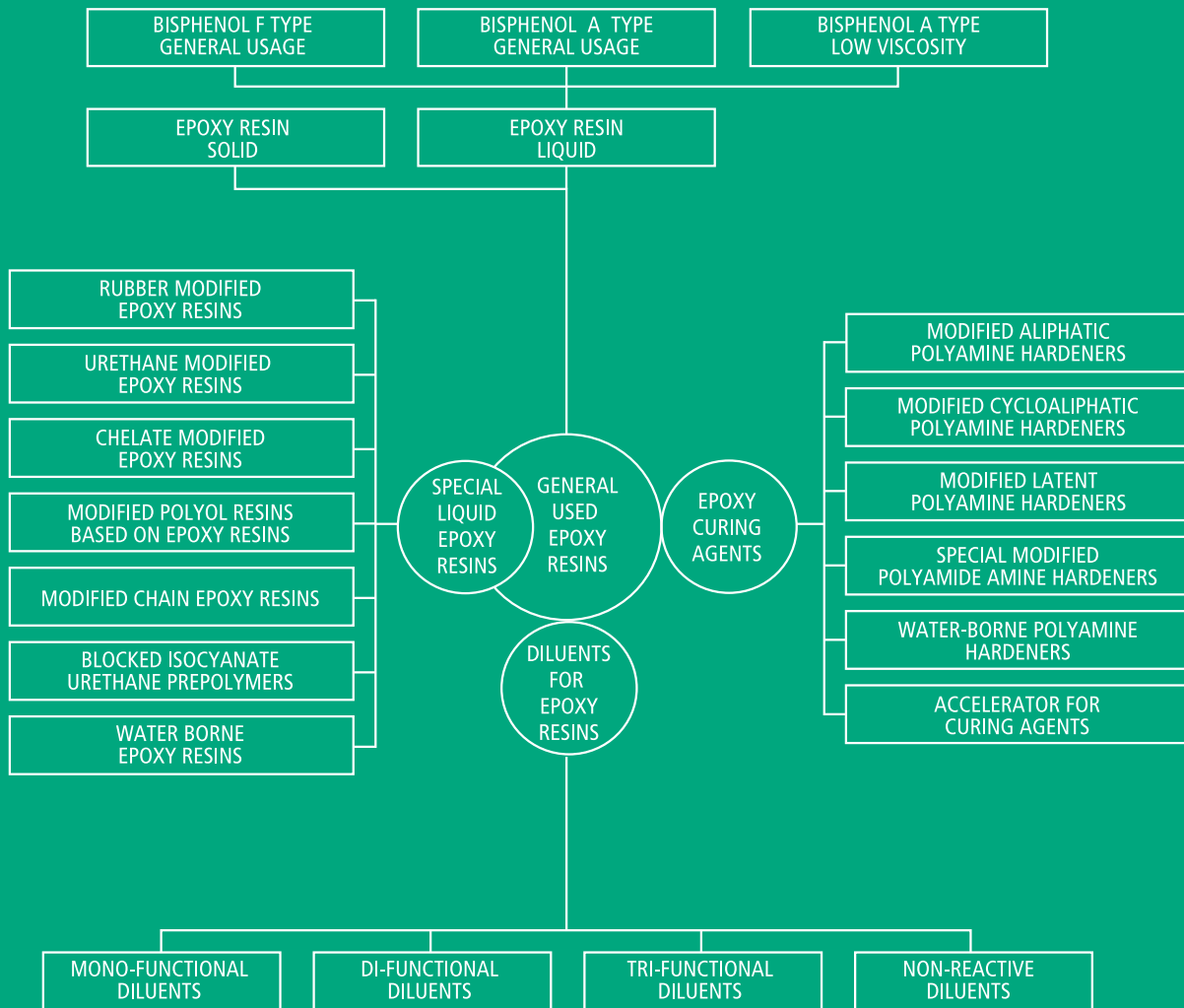
4

Functional Polymers

We have an assortment of synthetic materials and processed products. Our synthetic resin are widely used for industrial applications including automobiles and household appliances. They are also used in important facets of modern life including housing-related construction materials, civil engineering and daily commodities. We continue to strive to produce stable supplies of highly functional materials and finished products in order to meet the needs of customers as their markets diversify from year to year.

EPOXY RESINS

Epoxy Resins



EPOXY RESINS



Among thermosetting resins, epoxies combine outstanding performance/processing properties with economical efficiency. Their varied properties have been utilized in a wide variety of fields including paints, electrical parts, adhesives and civil engineering/construction. As an integrated manufacturer of epoxy resins, diluents and curing agents, we continue to develop new technologies.

CLASSIFICATION	PRODUCT NAME	COMPOSITION	APPLICATIONS
CONVENTIONAL EPOXY RESIN	ADEKA RESIN EP-4100 series	Basis Bisphenol A	General used type.For adhesives and civil engineering.
	ADEKA RESIN EP-4500 series	Basis Bisphenol A/low viscosity	Low viscosity.For civil engineering.
	ADEKA RESIN EP-4900 series	Basis Bisphenol F	Low viscosity and general used type.For civil engineering.
	ADEKA RESIN EP-5100 series	Basis Bisphenol A/solution	Solvent diluted type.For coatings.

CLASSIFICATION	PRODUCT NAME	PRODUCT TYPE	APPLICATIONS
SPECIAL TYPE EPOXY RESIN	ADEKA RESIN EP-4000 series	Special liquid type	Flexibility type.For adhesives and civil engineering.
	ADEKA RESIN EP-49 series	Chelate modified type	For adhesivesand coatings on rusted steel surfaces.
	ADEKA RESIN EPU series	Urethane modified type	For adhesives and structural adhesives.
	ADEKA RESIN EPR series	Rubber modified type	For structural adhesives.
	ADEKA RESIN EM series	Water-borne type	Emulsion type.For coatings and architectural primers.
	ADEKA RESIN QR series	Blocked isocyanate urethane type	For civil engineering and adhesives.Adhesive promoter for PVC plastisol.
	ADEKA RESIN EP-6000 series	Modified polyol resin based on epoxy resin	Corrosion resistant coatings.

CLASSIFICATION	PRODUCT NAME	PRODUCT TYPE	APPLICATIONS
EPOXY CURING AGENTS	ADEKA HARDENER EH series	Modified aliphatic polyamine	For civil engineering and floorings.
		Modified cycloaliphatic polyamine type	Weather resistance type.For civil engineering.
		Modified polyamide amine type	For adhesives,civil engineering and coatings.
		Water-borne polyamine type	For water-borne coatings,primers and sealers.
		Latent type	Adhesives for electronics,and steel.
	ADEKA HARDENER EHC -30	Catalyst of tertiary amine type	Accelerator for curing agents.

CLASSIFICATION	PRODUCT NAME	PRODUCT TYPE	APPLICATIONS
DILUENTS FOR EPOXY RESIN	ADEKA GLYCIROL ED series	Mono-functional type	Floorings.
		Di-functional type	High reactivity,adhesives and electrical parts.
		Tri-functional type	High hardness.For coating.
		Non-reactive type	Improves surface amine-blush and gloss in cured film.floorings

LOW CHLORINE EPOXY RESINS & LATENT HARDENERS for electrical use



Designing low chlorine type special epoxy resins and latent hardeners, we supply them to customers for electrical use. These materials enable to realize high performances, such as good adhesion property to non-ferrous metals, Polyimide substrates, and low temp.(80°C) curability.

CLASSIFICATION	PRODUCT NAME	COMPOSITION	CHARACTERISTICS
SPECIAL TYPE EPOXY RESIN	ADEKA RESIN EP-4000S, L series	Special structure epoxy resin	Flexibility ,good adhesion property, low chlorine
	ADEKA RESIN EP-4088 series	Special structure epoxy resin	Good adhesion, low viscosity
	ADEKA RESIN EP-3300 series	Special structure epoxy resin	High reactivity
	ADEKA RESIN EP-3950 series	Special structure epoxy resin	High Tg
	ADEKA RESIN EP-49 series	Chelete modified epoxy resin	Good adhesion on non-ferrous metals
	ADEKA RESIN EPR series	Rubber modified epoxy resin	Flexibility good adhesion and thermostability, low chlorine
DILUENTS FOR EPOXY RESIN	ADEKA GLYCIROL ED series	Reactive epoxy diluent	Good dilution effect, low chlorine
EPOXY CURING AGENTS	ADEKA HARDENER EH series	Latent hardener	High Tg, good stability in one component, fast and low-temp. curability

POLYURETHANES

Polyurethanes

WATER-BORNE POLYURETHANES

One Component Polyurethane Adhesives

POLYURETHANE RAW MATERIALS

Polyether Polyol
Polyester Polyol



ADEKA is a diversified polyol manufacturer, supplying polyurethane-related products ranging from various raw-material polyols for polyurethanes through to polyurethane form prepolymers used in heat insulation, foam-cushioning and other applications. We also supply high-function polyurethane resins such as environmentally friendly water-borne products.

PRODUCT NAME	COMPOSITION	APPLICATIONS
ADEKA BONTIGHTER HUX series	Water-borne polyurethane	Coatings (Plastics, Metal), Adhesives
ADEKA POLYETHER P series	Polyether diol	Paints, Adhesives, Elastmers
ADEKA POLYETHER G series	Polyether triol	Foams, Paints
ADEKA POLYETHER EDP series	Polyether tetraol	Rigid foams
ADEKA POLYETHER BPX series	BPA based polyether	Paints, Adhesives
ADEKA POLYETHER FC series	Flame retardant polyol	Foams, Paints
ADEKA POLYETHER AM, CM series	PO-EO blocked polyol	Foams, Sealants, Adhesives
ADEKA POLYETHER PR, GR series	PO/EO random polyol	Foams, Sealants, Adhesives
ADEKA NEWACE series	Polyester polyol	Foams, Elastomers, Adhesives, Paints

5

Comodity Chemicals

Commodity chemicals represent the core of our chemical business. This segment comprises peroxide chemicals, basic chemicals and industrial materials. Peroxide chemicals have hydrogen peroxides and persulfates. Basic chemicals have caustic soda, chloride and propylene glycols. Industrial materials have water swelling materials and grouts. They have developed a strong confidence and support among our customers.

PEROXYGEN CHEMICALS



Among our peroxygen chemical range we offer hydrogen peroxides, persulfates, sodium percarbonate and peracetic acid. Hydrogen peroxide offers the advantageous property of being totally free of environmental pollutants. As such, it enjoys widespread application in various fields. Among our persulfate products, we have ammonium, sodium and potassium.

PRODUCT NAME	GRADE	APPLICATIONS
HYDROGEN PEROXIDE		Pulp & Paper, Fibers, Synthetic resins, Oxygen sources, Plasticizers, Grease, Pharmaceuticals, Cosmetics, Foodstuffs, Leather, Metal finishing, Timber, Sewage disposal, Electronics, Soil improvement additives, Chemicals, etc.
	High Purity	Agent for wafer-preparation process, device-fabrication process etc.
AMMONIUM PERSULFATE		
SODIUM PERSULFATE		Printed circuit boards, Metal surface treatment, Soil improvement additives, Fibers, Foodstuffs, Chemicals, etc.
POTASSIUM PERSULFATE		
SODIUM PERCARBONATE		Detergent for fibers, Deslime, Pollution, Cosmetics, etc.
PERACETIC ACID		Sanitizer for food and beverage processing, Germicidal agent for medical appliances

REDUCING AGENTS



Among our functional products are metal surface treatment agents for electronic components and stabilizers for alkaline hydrogen peroxide solution.

PRODUCT NAME	APPLICATIONS
DIETHYLHYDROXYLAMINE	Macromolecules (Polymerization halter, Polymerization inhibitor, Popcorn polymer formation inhibitor, Hardner ingredient, etc.) Boilers, Photography, etc.

FUNCTIONAL PRODUCTS



Among our reducing agents we offer diethylhydroxylamine.

PRODUCT NAME	APPLICATIONS
ADEKA TEC A series	Copper surface treatment (Micro etchant)
ADEKA TEC CL series	Copper surface treatment (Micro etchant)
ADEKA TEC SA series	Copper surface roughening agent
ADEKA TEC CAP	Copper/copper alloy chemical polishing agent for brass and copper
ADEKA PAOTIZER RA series	Pickling agent for SUS, Regenerator for Ferrous Chloride type Etchant
ADEKA TEC ND series	Cleaning agent for DFR, PSR developing / stripping equipment
ADEKA TEC HES series (Isethionic acid)	Metal Plating Assistant, Metal Finishing Agent, Raw Material of Surfactant

INORGANIC CHEMICALS



This product line consists of caustic soda, chlorine, and their derivatives, produced by brine electrolysis. Caustic soda and their derivatives have played an important role in this company since their introduction as a fundamental product within our commodity chemicals business. The other major inorganic grouping is chloride. These are used in every corner of business and society. Through the many derivatives of these products, we have made contributions to various fields of endeavor.

PRODUCT NAME	GENERAL NAME	APPLICATIONS
LIQUID CAUSTIC SODA	Liquid caustic soda	Pulp and paper, Chemical fiber, Soaps, Almina, Dyeing and Water treatment
SODIUM SILICATE	Sodium silicate	Synthetic detergent builder, Soaps, Grouting materials, Bleaching materials for fiber and pulp, Inorganic paints and Water treatment
ADELITE AT series	Colloidal silica	Antislipping agent for paper and fiber, Binding for metal casting and refractory materials, Catalyst carrier and Reinforcing material for adhesives and paint
HYDROCHLORIC ACID	Hydrochloric acid	Sodium glutamate, Dyes, Medicine, Organic chemicals, Cleaner of metal, Soy sauce
ADEKA CHLORITARD		Cleaner of metal
LIQUID FERRIC CHLORIDE	Liquid ferric chloride	Sewage treatment

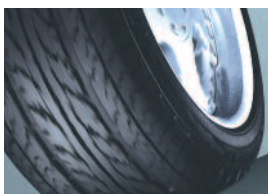
PROPYLENE GLYCOLS



ADEKA was the first company in Japan to produce propylene glycols. These are used in industries as an intermediate material for polyester resins, plasticizers and printing inks. They are also used in prescription medications, cosmetics and within the food industry as food additives.

PRODUCT NAME (GENERAL NAME)	GRADE	APPLICATIONS
PROPYLENE GLYCOL	PG(T) Industrial grade	Unsaturated polyester resin, Antifreezing, Solvent
	PG(P) Pharmaceutical grade	Wetting agent for cigarettes, Cosmetics, Dental cream, Medicine, Food additives
DIPROPYLENE GLYCOL	DPG	Unsaturated polyester resin, Ink, Wetting agent for cellophane
	DPG-RF Refine grade	Solvent for perfume, Moisturizer for toiletries
TRIPROPYLENE GLYCOL	TPG	Unsaturated polyester resin, Ink, Brake fluid

OLEO CHEMICALS



ADEKA was the first company in Japan to produce hydrogenated oils (hardened oils) utilizing the hydrogen gases generated by brine electrolysis.

PRODUCT NAME	GENERAL NAME	APPLICATIONS
AFCO CHEM (METALLIC SOAP)	ZNS series	Zinc Stearate Plastics, Pigment color, Wood paint, Powder metallurgy
	CS series	Calcium Stearate Plastics, Pigment color, Shell mold
	MGS series	Magnesium Stearate Plastics, Pigment color

CIVIL ENGINEERING & CONSTRUCTION MATERIALS



We have a wide range of products for civil engineering and construction that can be applied to a variety of fields. These include "ADEKA ULTRASEAL", a waterstop that utilizes the elasticity and water-swelling properties of rubber; "ADEKA ROCKDINE", which is useful for repairing concrete products; and "HYBRID SILICA", which is a ground stabilizer.



[Water swelling materials]

"ADEKA ULTRASEAL" is an innovative double-locking hydrophilic waterstop. ADEKA ULTRASEAL "stops water by compression of the rubber and by hydrophilic action (expansion pressure) when it is exposed to water." ADEKA ULTRASEAL "has various applications.

PRODUCT NAME	CHARACTERISTICS	APPLICATIONS
ADEKA ULTRASEAL MC series	Excellent ability to fill any concrete voids. 2 times expansion by volume.	Construction joint. H-pile. Piping penetrations
ADEKA ULTRASEAL KM series	Excellent tensile and compressive strength. 3 times expansion by volume.	Expansion joints. Box culvert joints
ADEKA ULTRASEAL KMU series	Excellent tensile and compressive strength. 3 times expansion by volume.	Segment joints. Expansion joints. Box culvert joints
ADEKA ULTRASEAL KBA series	Foamed rubber. Easy compressibility. 1.3 times expansion by volume.	Box culvert joints, Construction joint
ADEKA ULTRA RING	1.8 times expansion by volume.	Separator
ADEKA "OF" PACKING	1.8 times expansion by volume.	Segment bolts
ADEKA "AU" PACKING	Unite washer type. 1.8 times expansion by volume.	Segment bolts
ADEKA ULTRASEAL P-201A	Paste type in cartridge. 2 times expansion by volume.	Rough surfaces. Wire-net joints
ADEKA ULTRASEAL P-101	Paste type in cartridge. 1.3 times expansion by volume.	Rough surfaces. Ground structure
ADEKA ULTRASEAL A-50N	Pourable one component liquid waterstop. 5 times expansion by volume.	Sheetpile interlocks
ADEKA ULTRASEAL A-30	Pourable two component liquid waterstop. 3 times expansion by volume.	Sheetpile interlocks

[Concrete protective materials]

By using manufacturing technologies developed for silicates, we have developed concrete protective materials. Inorganic type infiltrates into the surface of concrete structures and react to form high-strength protective layers.

PRODUCT NAME	CHARACTERISTICS	APPLICATIONS
ADEKA ULTRA GUARD 001	Hardening concrete surface. Excellent anti-abrasion	Floors of stores, warehouses, factories, etc.

[Grouts]

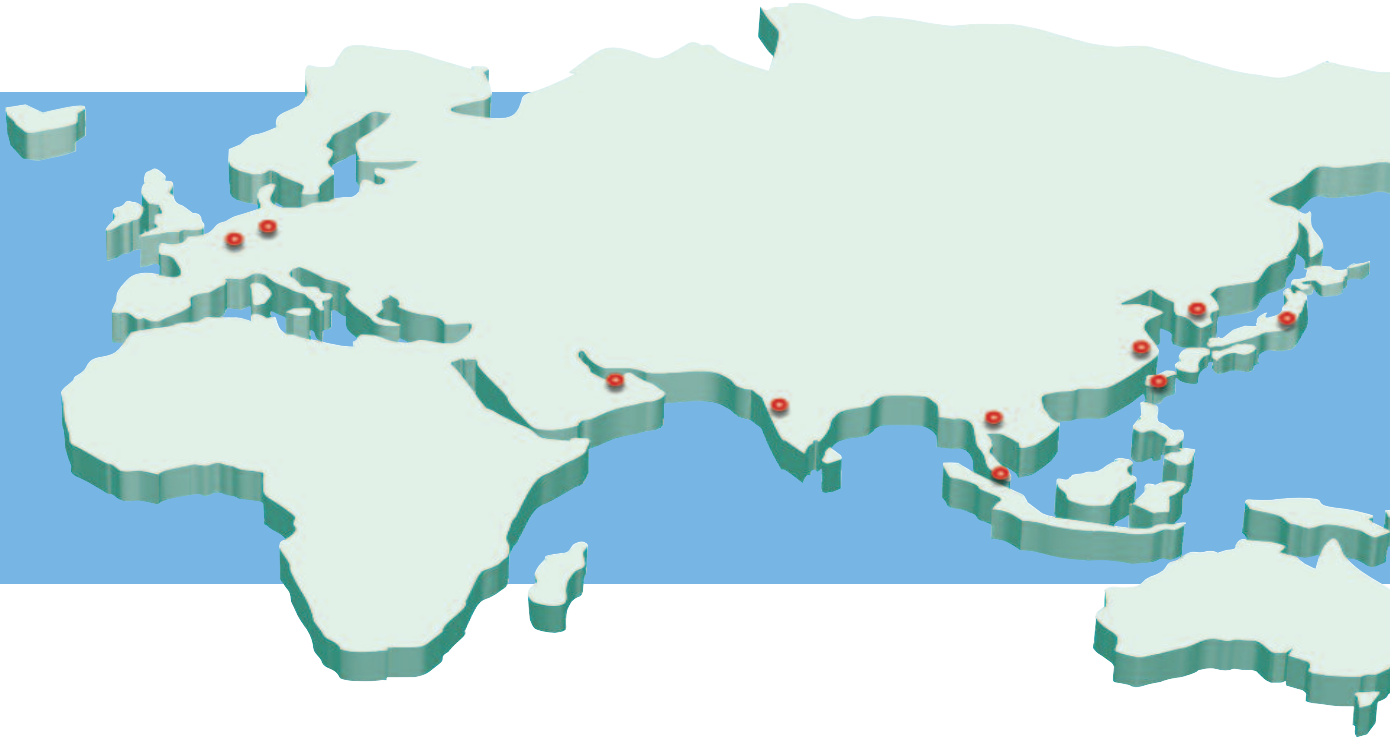
Among our grouting materials, we have high-strength, durable "HYBRID SILICA". We also have "GELFOUR" grouting material that is available for supplementary method to tunnel. These products are useful for the strengthening of soft ground, the prevention of ground liquefaction or the prevention of falling soil block when excavating tunnel. Their development is based on our experience and years of silicate material manufacture research.

PRODUCT NAME	CHARACTERISTICS	APPLICATIONS
HYBRID SILICA S,L,M	Super fine grained suspension grouts. Long durability.	Subbase course. Provide with strength
PERMA ROCK AT,ASF	Solution type grout. High infiltrable. Long durability. High safety products.	Prevention of liquefaction
GELFOUR	Completely inorganic grout. High strength	Supplementary method of mountain tunnel

ADEKA is making the utmost effort to advance product quality through our global network.

ADEKA worldwide location

As we expand and reinforce our production system and build our competitiveness worldwide, we also advance corporate activities with local culture and characteristics in mind, to deliver products and services that match local needs.



ADEKA

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KUKI R&D CENTER

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Phone:81-480-85-5431 Fax:81-480-85-3632



TOKYO R&D CENTER

Area:11,652m²
Surfactants
Lubricants
Electronics products
Light curing resins
Recording materials



URAWA R&D CENTER

Area:3,744m²
PVC stabilizers
Plasticizers
Plastic additives



KUKI R&D CENTER

Area: 12,141m²
Epoxy resins
Polyurethanes
Civil engineering & construction materials

PLANTS

Our all plants are ISO9001, 14001 and OHSAS18001 certification plant.



● KASHIMA PLANT

Area:186,612m²

Main products : Semiconductor materials
Etching solutions
Colloidal silica



● MIE PLANT

Area:100,404m²

Main products: Plastic additives PVC stabilizers
Plasticizers IT related chemicals



● KASHIMA PLANT-WEST

Area:101,000m²

Main products: Metallic soap



● FUJI PLANT

Area:131,897m²

Main products: Hydrogen peroxide Persulfates
Sodium percarbonate
Diethyl hydroxylamine
IT related chemicals



● CHIBA PLANT

Area:97,761m²

Main products: Propylene glycol Surfactants
Plasticizers
Epoxy resins
Raw material for polyurethane
Polyether IT related chemicals



● SOMA PLANT

Area:228,458m²

Main products: Lubricant additives
Certification: ISO 22301
(Business Continuity Management System)

To the customers of our chemicals:

- Review SAFETY DATA SHEET (SDS) before using ADEKA products.
- The data contained in this brochure may be changed without notice.
- The application and the data in this brochure do not warrant final function of your application.
- Information contained in this brochure is given in good faith but no liability is assumed nor is freedom from any industrial properties owned by ADEKA Corporation or others implied.
- * If you have further questions or inquiries, please contact our sales section.
- * ADK STAB is not used as a trademark in the USA.



ADEKA CORPORATION