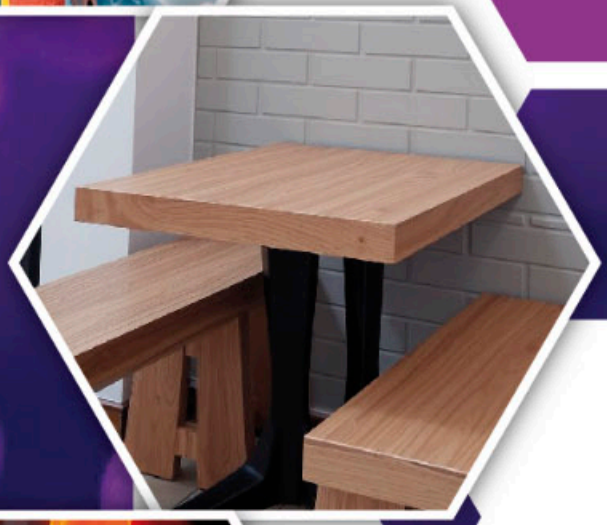
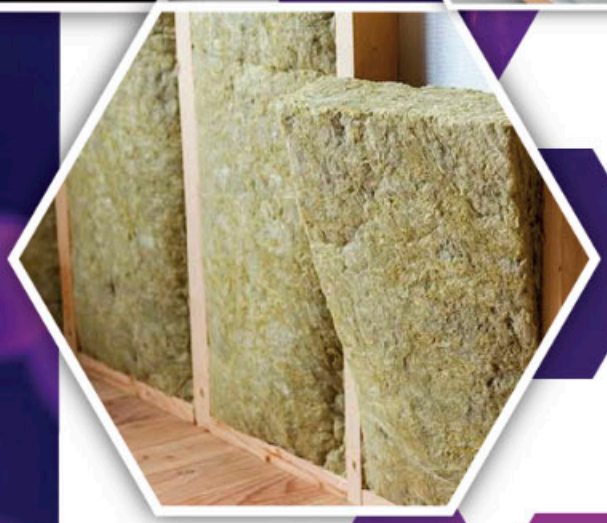
Polisan
KİMYA





PRODUCTS

Polisan
HOLDİNG

www.polisankimya.com.tr

Polisan KİMYA

Polisan Kimya, established in 1964, is the premier manufacturer of formaldehyde and its derivatives in Türkiye. As the first company in Türkiye to produce formaldehyde resins and water-based adhesives, our mission is to be the solution partner for customers across all sectors we serve, particularly in the wood-based panel industry. With a longstanding reputation as the most reliable partner for domestic manufacturers, Polisan Kimya is committed to leveraging its extensive expertise in its ongoing export operations.

Polisan Kimya utilizes 35,000 tons of methanol annually to produce 20,400 tons of 45% formaldehyde and 14,600 tons of 80% UFC (Urea Formaldehyde Concentrate) in its two continuous production facilities. In the first quarter of 2023, Polisan Kimya successfully completed an investment project that addressed all technical aspects of process safety and integrated Industry 4.0 technologies into its resin production plant, enhancing its production capacity to 150,000 tons per year.

The Polisan Kimya R&D Center is adept at developing new, customized formulations based on customer requirements. Our R&D infrastructure boasts five reactors with capacities ranging from 1 L to 150 L, a performance laboratory capable of simulating plywood production, and an instrumental analysis laboratory equipped with advanced devices such as elemental analysis, GC, GPC, and TGA. We actively collaborate with universities and engage with suppliers and customer stakeholders to drive innovation.

Polisan Kimya is a subsidiary of Polisan Holding, which has been publicly traded on the Istanbul Stock Exchange since 2012. Polisan Holding companies are committed to social responsibility initiatives that focus on gender equality, children, education, environment, and forestation, all aimed at enhancing quality of life. Additionally, Polisan Holding transparently shares its progress towards the Sustainable Development Goals (SDGs) through the publication of sustainability reports.

Polisan Kimya has also signed the Voluntary Agreement launched by the European Chemical Industry Council (CEFIC) to limit the formaldehyde exposure of the workers in the industry. In line with this agreement launched by Formacare, the formaldehyde sector group of the European Chemical Industry Council (Cefic), Polisan Kimya began producing resins compliant to the E0 standard (the lowest level of formaldehyde emission). 20% of the existing products meet the standards for low emission Class E1 and below.

50 YEARS OF EXPERIENCE

Polisan KİMYA

OUR SOLUTIONS

WOOD BASED PANELS

- Types of Wood-Based Panels and Their Applications
- Panel Classifications
- Urea Formaldehyde Resins (for Class-1 (IF20) Applications)
- Melamine Urea Formaldehyde Resins (for E0.5 Applications)
- Phenol Formaldehyde Resins (for WBP Applications)

SPECIAL APPLICATIONS

- Mineral Wool - Insulation
- Abrasives
- Foam Components
- Foundry – Sand Casting
- Refractory Bricks
- Cooling Pad
- Pallet Blocks
- Industrial Coatings & Adhesives (Amino Crosslinker)

CHEMICALS

- Formaldehyde & UFC

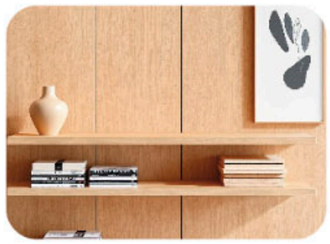
Polisan KİMYA

WOOD BASED PANELS

TYPES OF WOOD-BASED PANELS AND THEIR APPLICATIONS

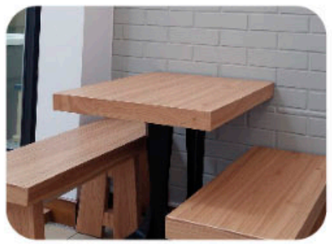
PLYWOOD
Made by gluing thin wood veneers in cross layers, making it strong and versatile. Used in furniture, packaging, construction, and various indoor and outdoor applications.
***Curved Plywood:** A specially processed plywood that is flexible and bendable, allowing it to form curved shapes without breaking. Used in modern furniture design, architectural elements, and decorative applications.

PARTICLEBOARD
Produced by compressing wood chips, sawdust, or flakes with synthetic resin, making it lightweight and cost-effective. Commonly used in furniture, flooring, and packaging.



MEDIUM DENSITY FIBREBOARD (MDF)
Manufactured by bonding fine wood fibers under heat and pressure, resulting in a smooth and uniform texture. Ideal for furniture, interior decorations, and cabinetry.

ORIENTED STRAND BOARD (OSB)
Composed of compressed wood strips arranged in cross layers, offering high strength and durability. Used in construction, packaging, and flooring.



BLOCKBOARD
Features a core of softwood strips sandwiched between hardwood veneers, making it lightweight yet sturdy. Suitable for doors, tables, and shelving.

PANEL CLASSIFICATIONS

	IF20	MR67	WBP
Resin	UF	MUF	PF and MUF
Water/ Moisture	Low	Moderate	High
Resistance	Dry interior	Slightly humid	Exterior and
Application Areas	use only	interior environments	high-load structural applications
EN314	**Class 1**	**Class 2**	**Class 3**

European Formaldehyde Emission Classification (EN 717-1)

Class	Formaldehyde Emission Limit	Description	WBP
E0	≤ 0.070 mg/m³ (≤ 0.4 mg/L)	Ultra-low emission – Almost no formaldehyde release, comparable to natural wood.	Common Applications High-end furniture, hospitals, schools, children's toys.
E0.5	≤ 0.090 mg/m³ (≤ 0.5 mg/L)	Very low emission – Stricter than E1, but slightly higher than E0.	Premium furniture, eco-friendly interiors, high-standard plywood.
E1	≤ 0.124 mg/m³ (≤ 8 mg/100g)	Low emission – Safe for indoor use, widely accepted across Europe.	Standard furniture, flooring, plywood, MDF, particleboard.
E2	> 0.124 mg/m³ (8 - 30 mg/100g)	Higher emission – Not recommended for indoor use in some European countries.	Industrial applications, some construction materials (where regulation permits).

UREA FORMALDEHYDE RESINS
for Class-1 (IF20) Applications

Product	Class	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Gel time* (sec.)	Shelf life (weeks)		
						<20C	25C	30C
Poliurea 1065	**E1**	64.0-66.0	400-800	1.275-1.285	37-45	8-9	6-7	2-3
Poliurea 1067	**E0.5**	66.0-68.0	400-700	1.285-1.295	20-40	8-9	6-7	2-3
Poliurea 9465	**E0**	64.0-66.0	250-500	1.270-1.280	55-70	4-5	3-4	2-3
Poliurea XI67	**E1; curved plywood**	66.0-68.0	2000-3000	1.285-1.300	25-35	5-6	4-5	3-4

*50 g resin + 5 ml. % 10 NH_4Cl,1 ml. mixture at 100ºC.

The products listed in this table are representative examples. Variations exist within the product range based on application requirements, and tailor-made formulations can be developed according to customer specifications.

MELAMINE UREA FORMALDEHYDE RESINS
for E0.5 Applications

Product	Class	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Gel time* (sec.)	Shelf life (weeks)		
						<20C	25C	30C
MUFP8-ECO	**Class-2**	64.5-66.5	300-600	1.275-1.285	70-10	8-9	6-7	3-4
MUFP12-KR	**Class-2**	64.5-66.5	300-800	1.280-1.290	40-70	4-5	3-4	2-3
MUFP23-KR	**Class-2 & 3**	64.2-66.2	500-800	1.285-1.300	40-70	4-5	3-4	2-3

*50 g resin + 5 ml. % 10 NH_4Cl,1 ml. mixture at 100ºC.

The products listed in this table are representative examples. Variations exist within the product range based on application requirements, and tailor-made formulations can be developed according to customer specifications.

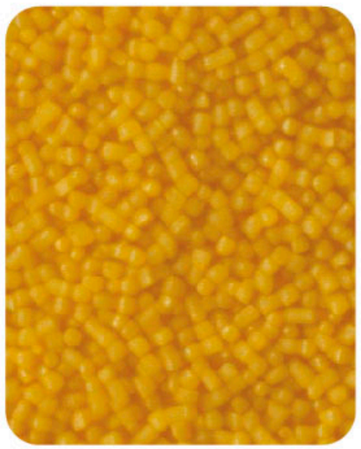
PHENOL FORMALDEHYDE RESINS
for WBP Applications

Product	Class	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Gel time* (105ºC, min.)	Shelf life (weeks)		
						<20C	25C	30C
POLIFEN 47	**Class-3**	46.0-48.0	300-700	1.200-1.215	10-20	6-8	3-4	2-3
POLIFEN 47 LV	**Class-3**	46.0-48.0	300-425	1.200-1.215	10-20	6-8	3-4	2-3

A new product with stability **exceeding 2 months** is currently in the R&D phase. It is expected to be commercialized in the **first quarter of 2025**.

The products listed in this table are representative examples. Variations exist within the product range based on application requirements, and tailor-made formulations can be developed according to customer specifications.





Polisan KİMYA

SPECIAL APPLICATIONS

MINERAL WOOL - INSULATION

ROCK WOOL
Made from volcanic rock melted and spun into fibers, providing excellent thermal and sound insulation. It is fire-resistant and commonly used in buildings, industrial insulation, and HVAC systems.

Resin: POLIFEN MWOOL S2

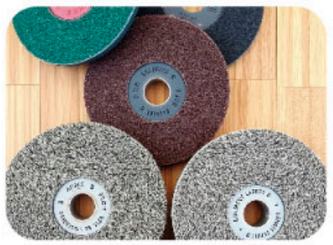
GLASS WOOL
Produced from recycled glass melted and spun into fine fibers, offering effective heat and sound insulation. Lightweight, non-combustible, and widely used in walls, ceilings, and duct systems.

Resin: POLIFEN 36-I

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Free Formaldehyde	Water Tolerance	Shelf life (weeks)		
						<15C	20C	25C
POLIFEN MWOOL S2	46.0-48.0	10-30	1.170-1.185	<0.5%	Infinite	4-5	3-4	2-3
POLIFEN 36-I	38.0-40.0	15-50	1.135-1.155	3.7-4.1%	Infinite	3-4	2-3	<2

The products listed in this table are representative examples. Variations exist within the product range based on application requirements, and tailor-made formulations can be developed according to customer specifications.

ABRASIVES



BONDED ABRASIVES
Made by combining abrasive grains with a bonding agent and forming them into solid shapes like grinding wheels, discs, and stones. Used for heavy-duty material removal, precision grinding, and sharpening applications.

COATED ABRASIVES
Consists of abrasive grains bonded to a flexible backing, such as paper, cloth, or film, forming sheets, belts, and discs. Ideal for surface finishing, sanding, and polishing in various industries.

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Water Tolerance	Gel time (min., 130ºC)	Shelf life (weeks)		
						<15C	20C	25C
POLIFEN ABR CS (color stabilized)	75.0-77.0	1000-2000	1.220-1.240	10-20	10-15	6-8	4-6	2-3
POLIFEN ABR FLC (flexible applications)	66.0-68.0	900-2000	1.210-1.230	15-25	10-15	6-8	4-6	2-3

The products listed in this table are representative examples. Tailor-made formulations can be developed according to customer specifications.

FOAM COMPONENTS

MINING APPLICATIONS
Phenol formaldehyde-based foam is used as a filling material in coal mines, providing fire resistance, sealing, and structural support. It is a key component of a two-component system, ensuring controlled expansion and durability in underground environments.

Resin: POLIFEN UFR-145

FLORAL FOAM
A specialized phenol formaldehyde resin-based foam designed for flower arrangement support. It retains water efficiently, keeping flowers hydrated while providing a stable structure for floral design. This foam is also part of a two-component system, ensuring optimal density and water absorption properties.

Resin: POLIFEN 765 TD

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Free Formaldehyde	Water Tolerance	Flow Rate (sec., D4,20ºC)	Shelf life (weeks)		
							<15C	20C	25C
POLIFEN UFR-145	70.0-75.0	900-1800	1.215-1.228	<0.5%	13-25	40-90	6-7	4-5	2-3
POLIFEN 765 TD	68.0-70.0	700-1000	1.210-1.230	<1.0%	18-25	200-400	6-7	4-5	2-3

The products listed in this table are representative examples. Variations exist within the product range based on application requirements, and tailor-made formulations can be developed according to customer specifications.

FOUNDRY – SAND CASTING

Sand casting is a widely used metal casting process where molten metal is poured into a sand mold to create complex shapes. This method is cost-effective, suitable for both small and large-scale production, and can be used with various metals such as iron, aluminum, and brass. It is commonly applied in the automotive, aerospace, and heavy machinery industries for producing durable and intricate components.

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Free Formaldehyde	Nitrogen Content	Shelf life (weeks)		
						<15C	20C	25C
POLIFEN ABR CS (color stabilized)	75.0-77.0	1000-2000	1.220-1.240	10-20	10-15	6-8	4-6	2-3

The products listed in this table are representative examples. Tailor-made formulations can be developed according to customer specifications.

REFRACTORY BRICKS

Refractory bricks are specially designed to withstand high temperatures, mechanical stress, and chemical corrosion. Made from heat-resistant materials such as alumina, silica, and magnesia, they are commonly used in furnaces, kilns, incinerators, and other high-heat industrial applications. Their excellent thermal insulation properties ensure energy efficiency and durability in extreme environments.

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Free Formaldehyde	Gel time (min., 130ºC)	Shelf life (weeks)		
						<20C	20C	25C
POLIFEN 76 TD	75.0-77.0	1000-2000	900-2300	<3.0 %	10-15	6-8	4-6	2-3

The products listed in this table are representative examples. Tailor-made formulations can be developed according to customer specifications.

COOLING PAD

Cooling pads are designed to enhance air cooling efficiency in various applications, such as evaporative cooling systems. Made from specially treated cellulose material, they provide high water absorption and evaporation rates, ensuring efficient cooling. These pads are widely used in industrial cooling, greenhouses, and poultry farming to maintain optimal temperature and humidity levels.

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Free Formaldehyde	Gel time (min., 130ºC)	Shelf life (weeks)		
						<20C	20C	25C
POLIFEN CPAD 50	50.0-53.0	30-75	1.175-1.185	<0.6 %	6-8	5-7	4-5	2-3

The products listed in this table are representative examples. Tailor-made formulations can be developed according to customer specifications.

PALLET BLOCKS

Pallet blocks are engineered wood or compressed sawdust blocks used as structural components in wooden pallets. They provide stability, strength, and durability, ensuring efficient load distribution and safe material handling. Commonly used in logistics, warehousing, and transportation, pallet blocks contribute to sustainable packaging solutions by utilizing recycled wood materials.

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Gel time* (min., 130ºC)	Shelf life (weeks)		
					<20C	20C	25C
MUFP8-ECO	64.5-66.5	300-600	1.275-1.285	70-10	8-9	6-7	3-4
MUFP12-KR	64.5-66.5	300-800	1.280-1.290	40-70	4-5	3-4	2-3

*50 g resin + 5 ml. % 10 NH4Cl,1 ml. mixture at 100ºC.

The products listed in this table are representative examples. Tailor-made formulations can be developed according to customer specifications.

INDUSTRIAL COATINGS & ADHESIVES
(AMINO CROSSLINKER)

Water-based alkylated melamine formaldehyde resin is a crosslinking agent designed for hydroxyl-containing emulsion polymers and aqueous systems with hydroxyl or amide functionality. It enhances durability, chemical resistance, and water miscibility in coatings, adhesives, and industrial finishes. This resin is widely used in automotive, wood, metal coatings, textiles, and paper applications, providing fast curing and improved performance.

Product	Solid (weight %)	Viscosity (cPs, 20ºC)	Density (g/cm³, 20ºC)	Water Miscibility*	Gel Time** (sec.)	Shelf life (weeks)
POLIMIN M 166	70.0-72.0	600-900	1.235-1.255	Clear	50-70	180 days when stored at 5°C and 30°C.

*40 g resin + 1000 mL water, 2 hours wait time
**50 g resin + 5 ml. % 10 NH4Cl,1 ml. mixture at 100ºC.

We are actively developing a diverse range of amino crosslinkers in our R&D pipeline, aiming to create a comprehensive product portfolio. These crosslinkers will be designed for industrial coatings, automotive finishes, packaging solutions, wood coatings, and adhesives, ensuring durability, chemical resistance, and sustainability.

FORMALDEHYDE & UFC

Formaldehyde (37% concentration) is widely used in polyacetals, amino resins (urea formaldehyde, melamine formaldehyde), MDI, and the production of pentaerythritol and butanediol. Polisan Kimya utilizes silver and metal oxide catalysts to oxidize methanol into formaldehyde, offering stabilized formulations with methanol.

UFC (Urea Formaldehyde Concentrate) is a high-concentration product (55.50-57.50% formaldehyde, 22.50-24.50% urea) used in amino resin synthesis, urea production, and agricultural fertilizers. Its long shelf life and high concentration provide transportation efficiency and improve UF resin production by shortening reaction time.

Product	Formaldehyde Content	Methanol Content	Formic Acid Content	Density (g/cm³, 20ºC)	Specific Gravity (25ºC/25ºC)	Flash Point (ºC, closed cup)	Shelf life (weeks)
POLİFOR 37	36.5-37.5 %	6.5-7.5 %	max. 500 ppm	1.090-1.100	1.093-1.103	71	3 months at 20-25ºC.
POLİFOR 37-10	36.5-37.5 %	10.0-11.0 %	max. 500 ppm	1.080-1.090	1.093-1.103	71	3 months at 20-25ºC.

Product	Formaldehyde Content	Urea Content	Density (g/cm³, 20ºC)	Viscosity (cPs, 20ºC)	Flow Rate (sec., D4,20ºC)	Shelf life (weeks)		
						<20C	25C	30C
UFC 80	55.5-57.5 %	22.5-24.0 %	1.280-1.310	100-300	25-50	6	5	4

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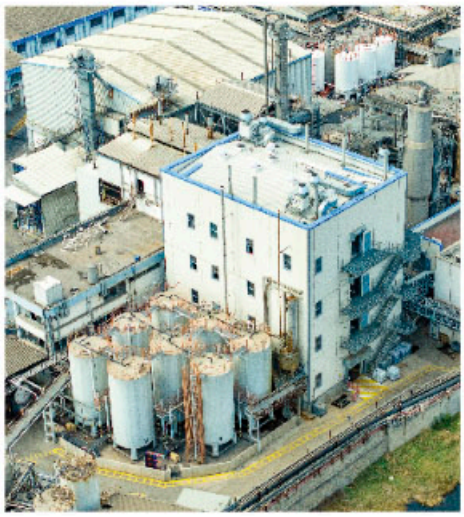
PRODUCTS



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