





"KOOLANCEL" company was established in 2008 as the first manufacturer of cellulose pads in the Middle East. Soon after, "ENERGY" Company started its cooperation with KOOLANCEL Company as a business partner, and this company joined as a member of ENERGY Holding. The result of this partnership and cooperation has been the increasing development and becoming the largest manufacturer of cellulose pads in the Middle East. It has also led to joint investment in Pakistan and the launch of the "SUPERKOOL" company to cover the region's attractive market better. In 2017, KOOLANCEL Company has developed the brand "NADPOLYMER" to manufacture unsaturated polyester, phenolic and acrylic resins per the customers' needs. KOOLANCEL'S approach has always been to manufacture high-quality products in line with the customer's needs and provide a superior value proposition. KOOLANCEL is the pioneer of the evaporative cooling pad industry for various applications in Iran.

The competitive edge of NADPOLYMER rests upon its dynamic research and development unit, poised to design and manufacture an array of unsaturated polyester, phenolic and acrylic resins in response to customer requisites. Additionally, a seasoned marketing and sales team adeptly promotes products in both domestic and international markets.

NADPOLYMER products offer a constellation of advantages, including:

- 1- Consistent Quality: A hallmark of stability.**
- 2- Tailored Solutions: Customized products intricately shaped to fulfill individual customer needs.**
- 3- Timely Deliveries: Punctuality in meeting commitments.**

Unsaturated Polyester Resins

Unsaturated polyester resins are among the most significant and industrially versatile thermosetting materials and are used in a wide range of applications, including composite products. These materials act as a matrix that retains the fibers and transmits external loads to them. NADPOLYMER products are used to manufacture the following parts and products:

- 1- GRP Pipes and Fittings and Pultrusion;
- 2- GRP tanks;
- 3- Marine Industries;
- 4- Construction industry: Bathtub, sink, artificial stone, prefabricated pool, and fiberglass sheet, marble sheet;
- 5- Polymer concrete pipe;
- 6- Decorative industry;
- 7- Sports and recreational equipment;
- 8- Auto parts (SMC/BMC process).



نادپليمر

1000 ml
NAD-1204

APPROX. VOL.

GRP Pipes and Fittings and Pultrusion

The assortment for pipes, fittings, and pultrusion encompasses a five of products primed for producing pipes across a spectrum of sizes, employing continuous and batch processes. A significant contributor to the-polymer export portfolio, these products have garnered the favor of contented clientele.

The perpetuated procurement of these offerings underscores the steadfast quality assurance associated with them.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1102	Ortho	10-20	<25	270-300	58-62	70±5	125±5	45-50	70-75
NAD-1103	Ortho	10-20	18-25	360-420	60-65	70±5	110±10	40-45	75±5
NAD-1104	Ortho	10-20	20-30	350-450	60-65	65±5	110±10	40-45	60±3
NAD-1201	Iso	10-20	15-22	360-420	60-65	75±5	120±5	40-45	85±5
NAD-1203	Iso	10-20	15-22	300-330	60-65	75±5	115±5	40-45	85±5

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

GRP Tanks and Stores

The NADPOLYMER resins which are produced for GRP Tanks have high HDT and hardness and are suitable for cold water storage.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1102	Ortho	10-20	<25	270-300	58-62	70±5	125±5	45-50	70-75
NAD-1103	Ortho	10-20	18-25	360-420	60-65	70±5	110±10	40-45	75±5
NAD-1104	Ortho	10-20	20-30	350-450	60-65	65±5	110±10	40-45	60±3
NAD-1201	Iso	10-20	15-22	360-420	60-65	75±5	120±5	40-45	85±5
NAD-1202	Iso	10-20	15-25	350-450	60-65	75±5	125±5	40-45	75±5

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

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Marine Industries

High tensile and flexural strength as well as reasonable prices and HDT have led to building high-quality and reliable yachts.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1102	Ortho	10-20	<25	270-300	58-62	70±5	125±5	45-50	70-75
NAD-1103	Ortho	10-20	18-25	360-420	60-65	70±5	110±10	40-45	75±5
NAD-1201	Iso	10-20	15-22	360-420	60-65	75±5	120±5	40-45	85±5
NAD-1202	Iso	10-20	15-25	350-450	60-65	75±5	125±5	40-45	75±5

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.



Construction Industry: Bathtub, Sink, Artificial Stone, Prefabricated Pool, and Fiberglass Sheet

Diverse product variations of NADPOLYMER cater to the construction industry.

the NAD-1111 resin, accentuated by its transparency and acrylic modifications, finds purpose in manufacturing solid surface.

Model NAD-1112 surges ahead with enhanced tensile and flexural strength, particularly suitable for composite part fabrication.

NAD-1119 resin, distinguished by transparency and flexibility, emerges as a prime candidate for producing fiberglass sheets.

NAD-1120 Resin excels in its capacity to incorporate powder materials, offering elevated hardness ideal for crafting assorted artificial stones.

NAD-1121 resin has a very high flexibility and is suitable for producing flexible sheets

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1104	Ortho	10-20	20-30	350-450	60-65	65±5	110±10	40-45	60±3
NAD-1111	Ortho	10-20	20-30	400±50	60-65	75±5	120-140	45-50	58-62
NAD-1112	Ortho	10-20	<40	350-550	64±3	55±5	105±5	39-41	50±5
NAD-1119	Ortho	5-10	20±5	250±100	62-67	30±5	90±10	N/A	40±5
NAD-1120	Ortho	10-20	20-30	350-463	60-65	70±5	110-130	45-50	55±5
NAD-1121	Ortho	5-10	15-25	280-300	64-68	10-30	N/A	<20	30-35

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

Polymer Concrete Pipe

NAD-1104 resin is a very suitable option for the producers of this sector due to its high compatibility with concrete compounds and very suitable processability in the production of polymer concrete pipes. Also, the very reasonable price of this product has made this resin very popular among customers.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1102	Ortho	10-20	<25	270-300	58-62	70±5	125±5	45-50	70-75
NAD-1103	Ortho	10-20	18-25	360-420	60-65	70±5	110±10	40-45	75±5
NAD-1104	Ortho	10-20	20-30	350-450	60-65	65±5	110±10	40-45	60±3
NAD-1201	Iso	10-20	15-22	360-420	60-65	75±5	120±5	40-45	85±5
NAD-1202	Iso	10-20	15-25	350-450	60-65	75±5	125±5	40-45	75±5

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

Decorative Industry

When creating grand decorative pieces like expansive statues, towering columns, and majestic capitals, the NAD-1112 resin takes the stage with finesse. Complementing this, the NAD-1114 resin gracefully sculpts smaller statues, intricate sculptures, and captivating decorative works.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1111	Ortho	10-20	20-30	400±50	60-65	75±5	120-140	45-50	58-62
NAD-1112	Ortho	10-20	<40	350-550	64±3	55±5	105±5	39-41	50±5
NAD-1114	Ortho	10-20	20-30	350-550	62-67	45±5	90±10	39-41	50±5
NAD-1120	Ortho	10-20	20-30	350-463	60-65	70±5	110-130	45-50	55±5

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.



Sports and Recreational Equipment

The products of this group are suitable for the production of children's toy equipment and Aqua-Parks.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1112	Ortho	10-20	<40	350-550	64±3	55±5	105±5	39-41	50±5
NAD-1114	Ortho	10-20	20-30	350-550	62-67	45±5	90±10	39-41	50±5
NAD-1104	Ortho	10-20	20-30	350-450	60-65	65±5	110±10	40-45	60±3

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

Auto Parts (SMC/BMC Process)

The NAD-1118 model, characterized by its formidable mechanical specifications, serves as an ideal candidate for crafting automobile components, including fan trays, headlights, and parts sculpted through the SMC process. Notably, the NAD-1102 model seamlessly facilitate the production of various automobile parts through a meticulous hand layup process, extending their utility to the cabins of both lightweight and heavy-duty vehicles.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1102	Ortho (BMC)	10-20	<25	270-300	58-62	70±5	125±5	45-50	70-75
NAD-1118	Ortho (SMC)	10-20	20-30	900-1200	65±3	55-65	70-90	50±2	95±5

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

Gel Coat

NAD-1204 is an iso-neopentyl (NPG) that specially designed for producing gel coats and top coats. Gel coat is an initial, surface layer used as a primary coating in the manufacturing of composite parts. This coating provides a smooth and high-quality appearance to the final surface, offering substantial resistance against environmental conditions and damage from sunlight, chemicals, and moisture. Additionally, gel coat plays an essential role in enhancing the durability and longevity of components, as well as preventing environmental damage.

Topcoats, which are applied as the final protective layer, not only increase the strength and resistance of the component but also give it a glossy and attractive finish. NAD-1204 resin, with its resistance features against UV radiation, corrosion, and wear, is an ideal choice for producing these types of coatings in various industries such as automotive, marine, and construction.

Products Model	Resin Type	Gel Time (min)	Acid Value (mgKOH/g)	Viscosity (CP)	Solid Content (%)	Tensile Strength (MPa)	Flexural Strength (MPa)	Hardness (Barcol)	HDT (C)
NAD-1204	Iso	10-20	15-25	700±30	65-70	70±5	120-130	40-45	60-70

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
- The HDT test is performed in about 5 hours at 105°C.

Water-Based Acrylic Resins

Nowadays, according to environmental conditions and requirements, the use of water-based resins is increasing rapidly. Based on the used monomer, water-based acrylic coatings are divided into groups of the pure acrylic homo polymer, acrylic-styrene copolymer, and vinyl acetate emulsions.

The KC-301 acrylic resin finds its niche as a robust adhesive or final coating for wood and paper applications. Its resolute resistance to water, commendable flexibility, permeability, adhesive strength, and elasticity collectively underpin its utilization across diverse fronts. From the production of cooling system cellulose pads to pre-coolers for gas turbines, greenhouse pads, and poultry pads, this versatile resin plays a vital role.

KC-305 resin is used for the production of tape adhesives and carton adhesives.

Products Model	Resin Type	Application	PH	Viscosity (CP)	Solid Content (%)	Tg (C°)
KC-301	Styrene Acrylic	Cellulose Pad Glue	6±1	13000-18000	40±1	<3
KC-302	Styrene Acrylic	Textile Industry	6±1	100-250	31±1	0
KC-303	Styrene Acrylic	Adhesion cellulose Pads	6±1	13000-18000	40±1	<3
KC-305	Pure Acrylic	Pressure-sensitive adhesive	4.5±0.5	1000 - 2000	57±1	<-40
KC-403	Styrene Acrylic	Outdoor and indoor paints	7-8.5	25000-40000	50±1	10-12
KC-503	Styrene Acrylic	Concrete waterproofing	6±1	25000-40000	50±1	-19

- The gel time and viscosity of all products can be adjusted for the customers.
- Achieving curing involves 0.1 phr of cobalt 10% and 1.5 phr of MEKP catalyst.
- The additional curing time for mechanical tests is 3 hours at 80°C.
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Phenolic Resins

Phenolic resins are divided into 2 types, Resol and Novolak, based on the molar percentage of formaldehyde to phenol and the alkaline or acidic medium used during production.

Resols are thermoset resins that are cross-linked and networked due to heat or acidic or basic catalysts. Their storage period is also limited. Novalacs are thermoplastic resins that have a long storage time.

Products Model	Resin Type	Application	PH	Viscosity (CP)	Solid Content (%)	Free Formaldehyde	Density
KC-201	Resol	Cellulose Pad Rock wool and	10-11	20-30	49±1	<0.5	1.15-1.18
KC-204	Resol	glass wool binder	9.0-9.5	10-14	40±1	N/A	1.16±0.01
KC-205	Resol	HPL sheets	8.8-9.3	14-17	54-56	<1.5	1.15-1.18
KC-207	Resol	Abrasives	6.5-7.5	800-600	70-75	N/A	1.2±0.05
KC-215	Resol	Foam and sponge	7-6	3500-4500	78-82	N/A	1.2±0.05

- All NADPOLYMER resol products are water-based.
- Viscosity has been measured with a DIN4 cup at 25°C.
- NADPOLYMER resols are used for producing cellulose pads and fibers, binders for industrial insulation materials such as glass wool and rock wool, various types of HPL sheets, and different abrasives. These resins are supplied as water-soluble solutions.

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