

Advanced Materials

# Structural Adhesives

Selector Guide



# About Huntsman Advanced Materials

Huntsman Advanced Materials provides engineered solutions for our customers using a wide range of innovative, high-performance thermoset chemistries and formulations. For over 60 years, customers have chosen Araldite®, Euremelt®, and Fastweld brand products for their high-performance adhesive technology.

Every day our scientists work with designers and engineers to bring lightweight, high-strength, durable products to market and help solve increasingly complex design issues. Our growing portfolio of adhesives serve the aerospace, automotive, coatings, electronics, energy and industrial composite markets.

## Structural Adhesives

For over 60 years, Huntsman Structural Adhesives have been preferred by customers worldwide for tough bonding applications. Today, our high-performance epoxies, polyurethanes, methacrylates, hot-melt polyurethanes and hot-melt polyamides continue to provide users with outstanding performance, as well as easy handling and processing.

Huntsman Structural Adhesives are well suited for both rigid and flexible substrates, such as metals, thermoplastics, thermosets, composites, rubber, ceramics, etc. They can be used on similar or dissimilar substrates.



# Why are more manufacturers choosing to assemble their products with adhesives?

## Design Flexibility

**Dissimilar Materials** – Unlike welding, adhesives can join metals to plastics, aluminum to steel, or a variety of other materials.

**Complex Assemblies** – Ability to join unusual and complex shapes.

**Finishing Operations** – Adhesive bonding gives a smooth appearance to designs. There are no protruding fasteners such as screws or rivets, and no spot weld marks.

**Watertight Joints** – The elimination of drilling operations helps prevent water ingress.

## Increased Productivity

**Easy to Use** – Huntsman adhesives are available in a variety of convenient packages, including tubes, cartridges and larger/bulk packaging to suit individual applications.

**Simplicity** – Adhesive bonding can both simplify and improve assembly procedures by replacing several mechanical fasteners or processing steps with a single bond or by allowing several components to be joined in one operation.

## Time and Cost Savings

**Reduced Assembly Times** – By reducing the number of joining and finishing operations, the overall production cycle can be reduced. This saves on labor costs and results in improved productivity.

**Reduced Raw Material Costs** – By joining and sealing simultaneously, the quantity and cost of raw materials required can be reduced. Huntsman gap-filling adhesives can allow for lower than optimal part tolerances, which can result in raw material cost savings.

## Improved Product Performance

**Fatigue Performance** – When substituting mechanical fasteners

with structural adhesives, fatigue resistance can be improved, hence product service life is extended.

**Stiffer Structure** – Continuous bonded joints may produce stiffer structures. Alternatively, if increased stiffness is not required, the weight of the structure can be decreased while maintaining the required structural integrity.

**Corrosion Protection** – Adhesives reduce the potential for corrosion usually associated with conventional fastening or bonding techniques.

**Vibration Damping** – Incorporated into the design, adhesive bonds can have good damping properties useful for reducing sound or vibration.



# Epoxy Adhesives

Two-component epoxies are known for their ability to produce high-strength bonds on substrates ranging from metals to plastics and thermosetting composites. These systems are formulated with a wide range of viscosities and working times to meet the processing and handling requirements of most projects. Benefits include: low shrinkage, excellent chemical and corrosion resistance, high-temperature performance up to 350° F (180° C), and good electrical insulating properties.

Product	Features	Industry / Application	Bulk Version	Pot Life, min	Handling Strength, min	Mixed Viscosity at 77°F, cP	Lap Shear Strength (AI) at 77°F, psi
Araldite® 2010-1	Toughened, high shear/peel strength, medium viscosity	Assembly, filters, sports & leisure	N/A	10	30	80,000	2,700
Araldite® 2011	High strength and toughness, multi-purpose, room temp cure, medium viscosity	Construction, automotive, sports & leisure, filters, assembly	Araldite® AW 106 / HV 953	100	420	37,500	3,800
Araldite® 2012	Medium viscosity, high strength and toughness, room temp cure	Construction, automotive, sports & leisure, filters, assembly	Araldite® AW 2104 / HW 2934	6	20	30,000	2,600
Araldite® 2013	Good environmental and chemical resistance, thixotropic, room temp cure	Construction, automotive, filters, assembly	N/A	65	240	Thixotropic	2,600
Araldite® 2014	Resistance to high temperatures and chemicals, room temp cure, thixotropic	Wind, construction, automotive, filters, assembly, oil & gas	Araldite® AW 139 / Hardener 5323	60	180	Thixotropic	2,800
Araldite® 2015	High toughness, excellent weathering and temp resistance, room temp cure, thixotropic	Wind, automotive, sports & leisure, filters, assembly, oil & gas	XB 5308 / Hardener 5309-1	40	240	Thixotropic	2,400
Fastweld™ 10	Fast cure, non-sagging paste, high strength, sandable, room temp cure, thixotropic	Automotive, oil & gas, repair work	Same	3-4	10	250,000	2,800
Araldite® 8545-1	Toughened, good flexibility, low expansion/contraction coefficient, medium viscosity	Sandwich panels, construction, assembly, oil & gas	Same	120	420	43,500	3,000
Araldite® 8595	Ideal for bonding oily metals, excellent flexibility, low viscosity	Sandwich panels, construction, assembly	Same	60	240	21,000	2,600
Araldite® EP 200	Flexible, high peel and shear strength, service temp -67°F (-55°C) to 200°F (93°C), room temp cure, thixotropic	Automotive, sandwich panels, construction, sports & leisure, filters	Same	60-70	360	Thixotropic	3,200
Araldite® EP 300	High lap shear and compressive strength, max service temp up to 400°F (204°C), room temp cure, thixotropic	Automotive, construction, assembly, filters, oil & gas	Same	30-35	240	Thixotropic	4,200

# Polyurethane Adhesives

Two-component (2C) polyurethane adhesives generally produce more flexible, resilient bonds and are typically the material of choice for joining tough-to-bond engineered thermoplastics, rigid plastics and composites, and metal-to-plastic assemblies. Polyurethane adhesives are easy to apply, offer good sag resistance and cure at room temperature. Once cured, the adhesives maintain outstanding resilience even at low temperatures and feature good shear strength and high impact resistance.

Product	Features	Industry / Application	Bulk Version	Pot Life, min	Handling Strength, min	Mixed Viscosity at 77°F, cP	Lap Shear Strength (AI) at 77°F, psi
Araldite® 2028	Fast setting, high strength, water clear, generates strong bonds, low viscosity, UV stable	Applications that require a clear bond	Araldite® 8628 / Araldite® 8629	6	20	5,800	2,000
Araldite® 2040	Good flexibility, low shrinkage, gap-filling, ideal for plastics, thixotropic	Applications where thermoplastics, ABS, and nylon are used	Araldite® AW 8680 / HW 8680	15	360	50,000	1,200
Araldite® 2041	High strength, good environmental stability and impact resistance, ideal for plastics and painted metals, thixotropic	Applications where thermoplastics, ABS, and nylon are used	Araldite® AW 8680 / HW 5541	15	240	50,000	1,650
Araldite® 2042	Fast curing, high strength, excellent flexibility, ideal for plastics, thixotropic	Applications where thermoplastics, ABS, and nylon are used	Araldite® AW 8680 / HW 5542	3	60	50,000	2,300
Araldite® AY 8650 / 5091-1	Low viscosity, performs well in extreme environments, long open time	Sandwich panels	Same	80	360	6,000	2,300
Araldite® AW 8680 / HW 8685	High strength, excellent environmental stability and impact resistance, thixotropic	Applications where thermoplastics, ABS, and nylon are used	Same	9	120	34,000	2,200

# Methyl Methacrylate (MMA) Adhesives

High strength and fast cure cycles characterize Huntsman's Araldite® methacrylate adhesives. Methacrylates are well suited for coating small and large areas with work lives ranging from 3 to 10 minutes and require less surface preparation. Handling time is from 9 to 12 minutes at room temperature, and adhesives can be applied from 20 to 300 mils thick. Cured methacrylates exhibit high lap shear strength and good tensile strength.

Product	Features	Industry / Application	Bulk Version	Pot Life, min	Handling Strength, min	Mixed Viscosity at 77°F, cP	Lap Shear Strength (AI) at 77°F, psi
Araldite® 2021-1	High strength and toughness, very fast cure	Automotive, assembly, sports & leisure	Araldite® F 361-1 / Hardener 361-1	3	9	Thixotropic	3,600
Araldite® 2022-1	High strength and toughness, fast cure	Automotive, assembly, sports & leisure	Araldite® F 362-1 / Hardener 362-1	10	12	Thixotropic	3,600

# Hot-melt Polyurethane Adhesives (PUR)

Single-component, moisture-curing, hot-melt adhesives are designed to be applied in molten form and cure in the presence of moisture to form a tough durable bond. Our polyurethane hot-melt products adhere to a wide variety of substrates, including wood and wood products, foams, primed metals, FRP and plastics including PVC and ABS (one substrate must be permeable). Ideal for roll coating of sandwich panel layers, Araldite® hot-melt polyurethanes have open times of three to seven minutes. The adhesives exhibit excellent elongation and produce laminates with good interlaminar lap shear and peel strengths.

Product	Features	Industry / Application	Gel Time, min	Lap Shear Strength (AI) at 77°F, psi	Mixed Viscosity at 77°F, cP
Araldite® HM PUR 3	Moisture curing, roll coater stable, 3 min assembly time	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	3	415	10,000-12,000
Araldite® HM PUR 5	Moisture curing, roll coater stable, 5 min assembly time	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	5	300	14,000
Araldite® HM PUR 7	Moisture curing, roll coater stable, 7 min assembly time	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	7	310	14,000



# Moisture Cure Polyurethane Adhesives (MCU)

Solvent free, single-component liquid polyurethanes include a wide range of curing systems. MCU adhesives are designed for the production of panels comprised of wood and wood products, foams, primed metals and FRP (one substrate must be porous). Polyurethane adhesives in the Araldite® moisture-cure product family are odorless and easy to dispense via roll coating or bead/spray/spatter application. They feature a range of open times from five minutes to more than one hour, making them suitable for use on panels of all sizes. A press with greater or equal to 4 psi is required.

Product	Features	Industry / Application	Assembly Time, min	Press Time, min	Density (25°C)	Viscosity at 77°F, cP
Araldite® MCU 7	Moisture cure, solvent-free, odorless, fast curing	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	7	14	1.1	4,000
Araldite® MCU 12	Moisture cure, solvent-free, odorless, fast curing	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	12	27	1.1	4,100
Araldite® MCU 23	Moisture cure, solvent-free, odorless, fast curing	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	23	46	1.1	4,000
Araldite® MCU 38	Moisture cure, solvent-free, odorless, fast curing	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	38	80	1.1	4,000
Araldite® MCU 65	Moisture cure, solvent-free, odorless, fast curing	Sandwich panels for RVs, trucks, trailers, construction and high durability doors	65	130	1.1	4,000



# Hot-melt Polyamide Adhesives

Single component, Euremelt® hot-melt polyamide adhesives are primarily used for the rapid assembly of structures which are subject to light loads, such as the filter industry, electronics and residential building industry. They are solvent free, offer short setting times, and are easy to apply using a manual or automated system. Euremelt® adhesives are available in different grades, and are designed to meet different bonding requirements across a variety of substrates.

Product	Features	Industry / Application	Softening Point (°F)	Melt Viscosity cP	Hardness
Euremelt® 1166	Very low melt viscosity, short open time, high heat stability under load	Assembly, electronics, filters	342-352	200-400 at 356°F	96A 40D
Euremelt® 2096-1	Flexible, low melting point and melt viscosity	Assembly, electronics, filters	198-216	2,100-2,700 at 320°F	94A
Euremelt® 2130-1	High flexibility and impact strength, low melt viscosity	Assembly, electronics, filters	257-275	3,000-4,600 at 392°F	83A
Euremelt® 2140	High flexibility and high melt viscosity	Assembly, electronics, filters	275-293	7,600-10,000 at 437°F	83A 26D
Euremelt® 2170	Good thermal resistance under load, low viscosity, UL 94 V-O rated	Assembly, electronics, filters	333-347	5,200-6,400 at 392°F	93A 40D
Euremelt® 2194	High thermal resistance under load, good chemical resistance, high melt viscosity	Assembly, electronics, filters	370-393	33,000-38,000 at 428°F	96A 68D
Euremelt® 2210	High thermal resistance under load, high flexibility, low melt viscosity	Assembly, electronics, filters	387-408	4,500-6,500 at 428°F	93A 31D
Euremelt® 2888	High thermal resistance under load, good chemical resistance, low melt viscosity	Assembly, electronics, filters	365-374	4,000-6,000 at 392°F	94A 50D
Euremelt® 3413	High flexibility at low temperature (also available in black color)	Assembly, electronics, filters	302-320	2,800-4,000 at 410°F	86A 28D

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