

Break new ground in cold environments

Ara[®] Cool

Low temperature curing agents

The brand new range opens new opportunities to formulate industrial coatings with very fast cure even in very cold conditions.



Low
solvent
content

Long
pot life

Fast
curing

Ara[®] Cool

The brand new range of low temperature curing agents

Ara[®] Cool curing agents open new opportunities to formulate industrial coatings with very fast cure even in very cold conditions. The launch of the new Ara[®] Cool range enables Huntsman to meet demands for faster processing at low temperatures as well as reduced VOC emissions.

Help coatings formulators address applicators' specific needs

Formulators can select the Ara[®] Cool curing agent that is best suited to the target application:



Excellent curing speed between 0 and 10°C

Speed up the cure process to save time and cost, without compromising on performance.



Extremely long pot life

Design your formulation around long pot life requirements, as well as benefiting from unmatched curing profiles.



Low to zero VOC content

Match the most challenging VOC levels for all low temperature cure applications.

Open new opportunities with coatings for cold conditions

Ara® Cool curing agents allow formulators to break new ground in addressing the needs of applicators working in cold conditions, alongside reducing VOC levels. The systems also deliver a workable pot life in ultra high solid formulations above 10°C whilst achieving extremely fast cure properties.

Open new opportunities in harsh climate regions

Enables VOC-compliant applications even in harsh climate regions

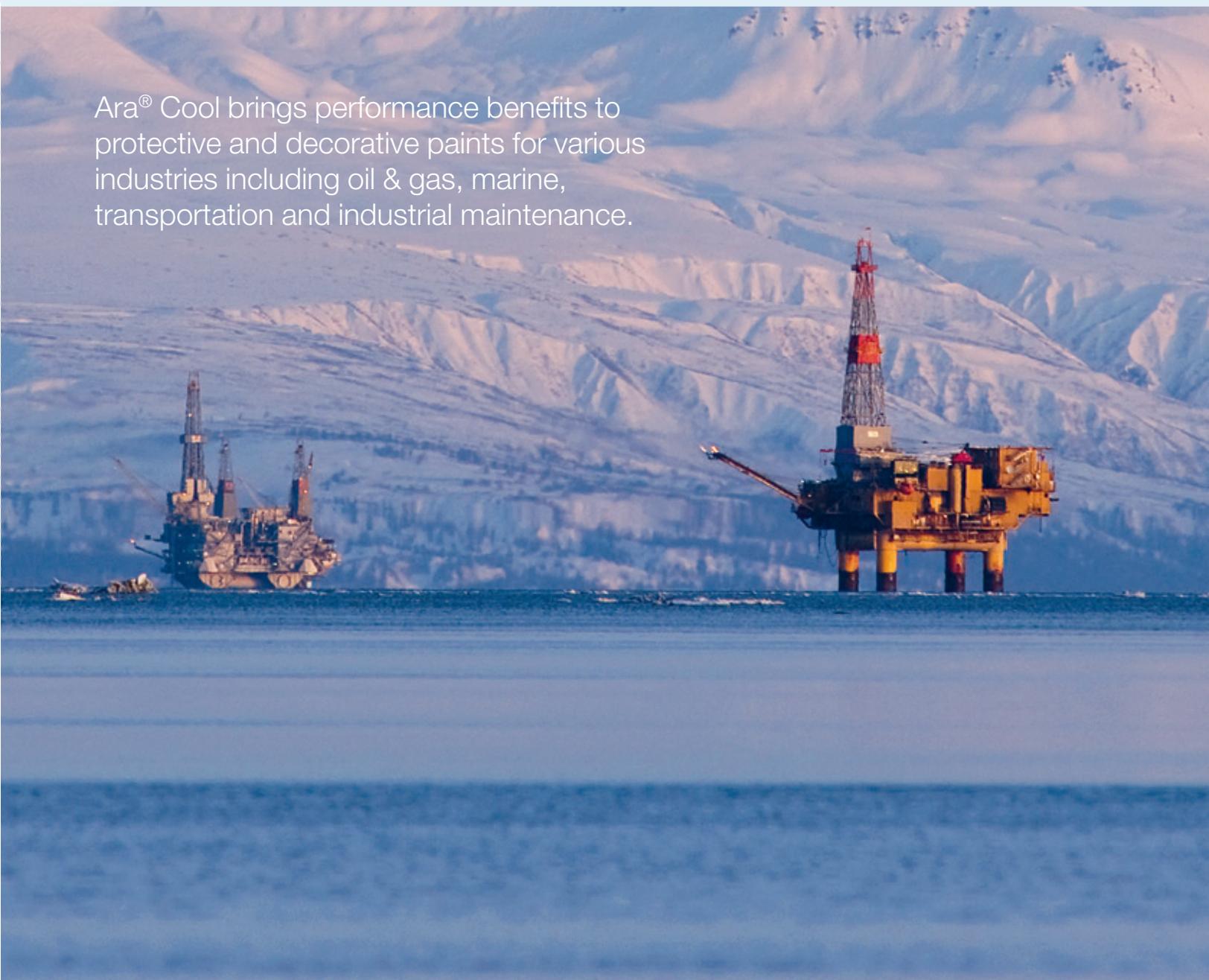
Extend the application window in cold seasons

Allow applicators and end users to work more efficiently by creating more working days per year.

Deal with unexpected bad weather

Reduce the risk of complaints by creating more weather robust formulations.

Ara® Cool brings performance benefits to protective and decorative paints for various industries including oil & gas, marine, transportation and industrial maintenance.



Ara® Cool 1034 XW 90

Low temperature curing hardener with very long pot life

A modified, Mannich-base type hardener, providing high reactivity at low temperatures to corrosion protection coatings for pre-treated steel surfaces

Ara® Cool 1034 XW 90 is an ultra high solid hardener designed for applications requiring outstanding hardness development in combination with long pot life.

It allows for very low VOC formulations with good EHS-profiles. No induction time is needed.

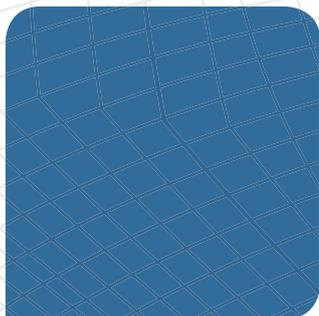


Applications

- > Anti-corrosion coatings on pre-treated (blasted) steel
- > Marine, HDP and maintenance/repair
- > A multitude of general protective and decorative paints

Key features

- > Ultra high solid anti corrosion hardener for cure down to 5°C
- > Extremely long pot life versus outstanding low temperature reactivity
- > SVHC-free



Ara® Cool 1034 XW 90

Low temperature curing hardener with very long pot life

Typical product characteristics at delivery

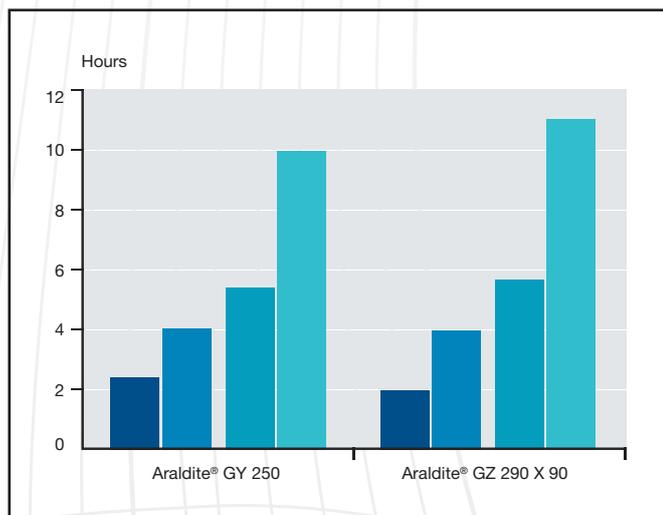
| | | |
|------------------|---------|---------------------|
| Viscosity | at 25°C | 1 000 - 2 500 mPa.s |
| Recommended HAEW | | 105 - 155 g/Eq |
| Amine value | | 415 - 450 mg KOH/g |

Typical characteristics when combined with Araldite® GZ 290 X 90 resin

| | | |
|--------------------------|---------------|-------------|
| Mix ratio | at HAEW = 155 | 55 : 100 |
| Solid content of the mix | | 90 % |
| Pot life | at 23°C | 1.5 hours |
| Tack free time | at 5°C | ~ 5.5 hours |
| | at 23°C | ~ 2 hours |

Cure speed at different temperatures

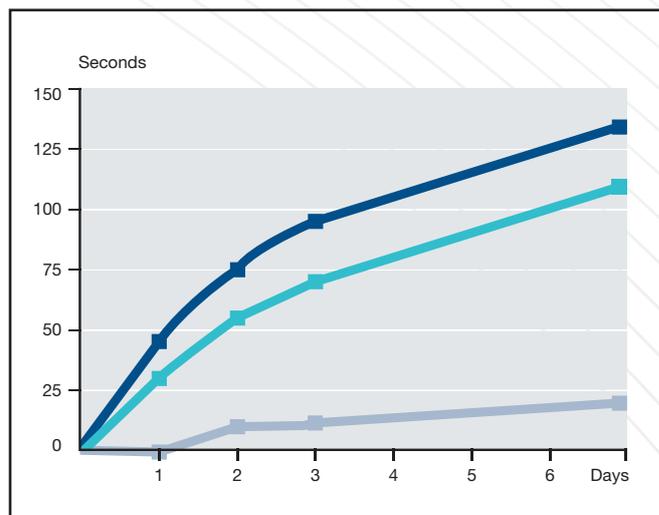
in combination with different resins



■ Dust free time at 23°C
 ■ Through cure time at 23°C
■ Dust free time at 5°C
 ■ Through cure time at 5°C

Pendulum hardness at 5°C

in combination with Araldite® GZ 290 X 90



■ Ara®Cool 1034 XW 90 (100% stoichiometry)
■ Ara®Cool 1034 XW 90 (80% stoichiometry)
 ■ Aradur® 450-1S

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Ara® Cool 1047 W 80

Surface tolerant low temperature curing hardener

A surface tolerant, Mannich-base type hardener, without residual volatile amine, that provides excellent corrosion protection to critical substrates

Ara® Cool 1047 W 80 is a high solid hardener, designed for coatings applications that require fast hardness development at 5°C or less.

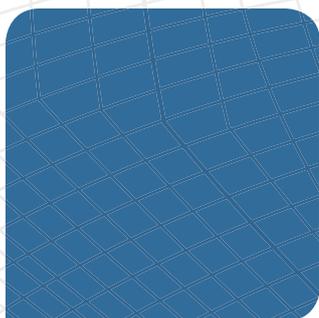
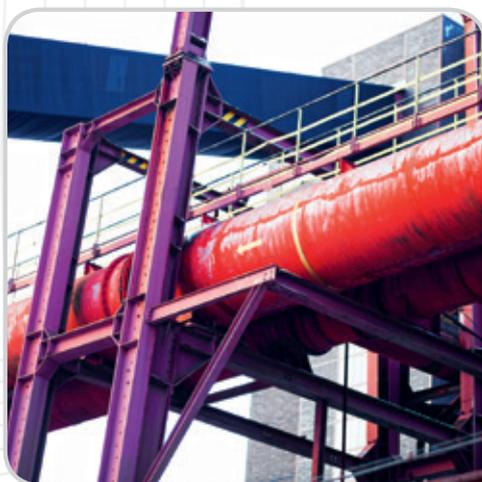
Excellent surface appearance and re-coatability even under humid and cold conditions. Outstanding flexibility and adhesion on poorly pre-treated substrates. Allows for low VOC (high solid) formulations.

Applications

- > Anti-corrosion coatings for critical substrates
- > Marine and maintenance
- > A multitude of general protective and decorative paints

Key features

- > Excellent adhesion on critical (unblasted) substrates
- > Very fast cure down to 0°C and even lower
- > SVHC free
- > Low VOC levels and good EHS-profile



Ara[®] Cool[™] 1047 W 80

Surface tolerant low temperature curing hardener

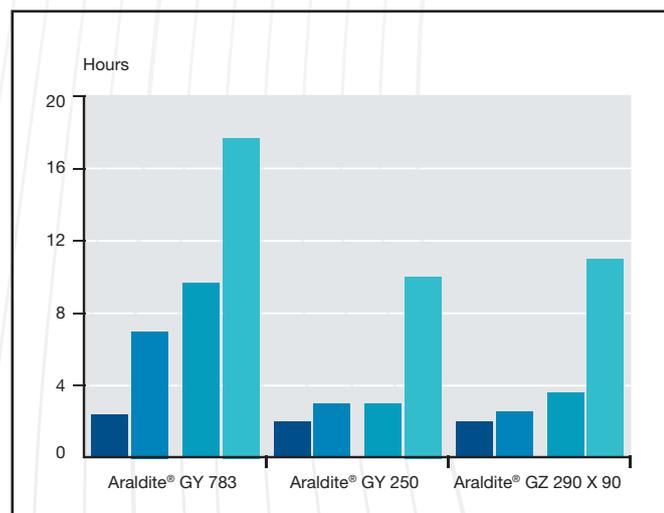
Typical product characteristics at delivery

| | | |
|------------------|---------|---------------------|
| Viscosity | at 25°C | 1.800 - 2.700 mPa.s |
| Recommended HAEW | | 130 - 185 g/Eq |

Typical characteristics when combined with Araldite[®] GZ 290 X 90 resin

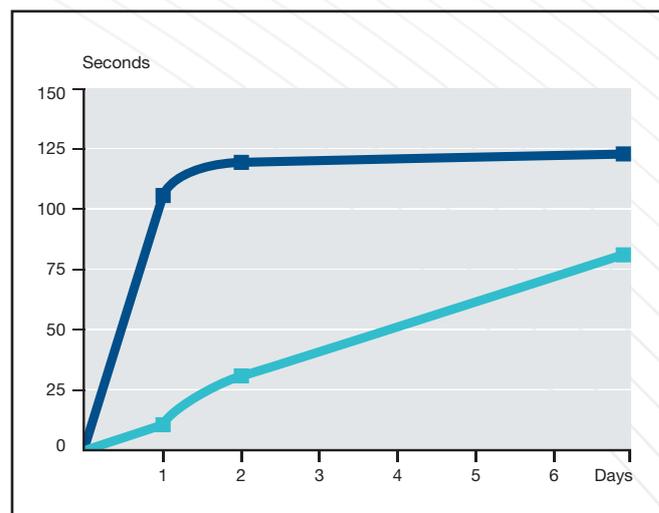
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|--------------------------|---------------|------------|
| Mix ratio | at HAEW = 155 | 65 : 100 |
| Solid content of the mix | | 86 % |
| Pot life | at 23°C | 34 minutes |
| Tack free time | at 23°C | < 2 hours |
| | at 5°C | < 4 hours |

Cure speed at different temperatures in combination with different resins



■ Dust free time at 23°C ■ Through cure time at 23°C
■ Dust free time at 5°C ■ Through cure time at 5°C

Pendulum hardness at different temperatures in combination with Araldite[®] GZ 290 X 90



■ Days of cure at 23°C ■ Days of cure at 5°C

Learn more on www.huntsman.com/advanced_materials

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Ara® Cool 3077

Multipurpose low temperature curing hardener (zero-VOC)

A highly reactive, formulated amine offering a zero-VOC alternative to products containing benzyl alcohol and/or SVHC

Ara® Cool 3077 is a low temperature curing agent, designed as a SVHC-free multipurpose hardener for coating and flooring applications.

Provides excellent reactivity at temperatures as low as 5°C. It can be used as an accelerating co-curative with many different curing agents and in various applications.

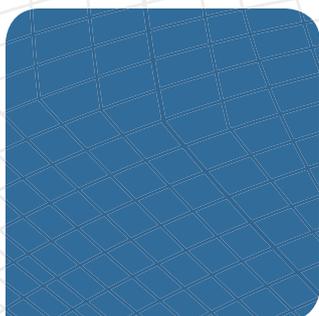


Applications

- > Low emission floorings especially for low temperature cure
- > Zero-VOC anti-corrosion primers (5-10°C cure)
- > Co-accelerator for slow hardeners
- > Multipurpose hardener

Key features

- > SVHC-free
- > No benzyl alcohol (low emission hardener)
- > Excellent reactivity down to 5°C
- > Good surface properties even at low temperature (low blushing)
- > Relatively low viscosity (460 - 540 mPa.s)



Ara[®] Cool=3077

Multipurpose low temperature curing hardener (zero-VOC)

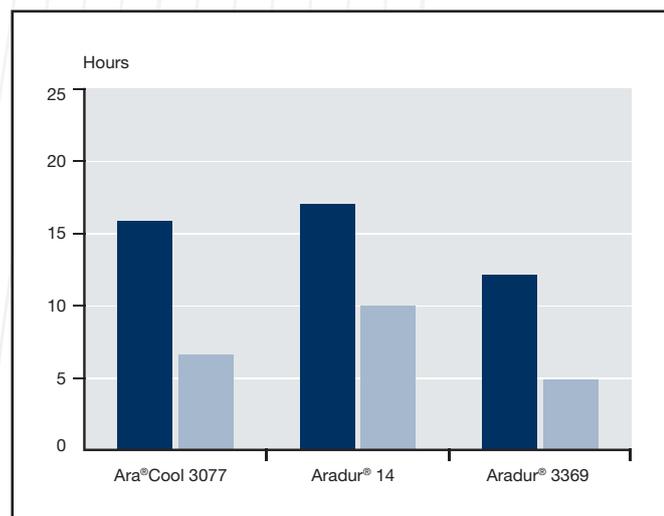
Typical product characteristics at delivery

| | | |
|------------------|---------|-----------------|
| Viscosity | at 25°C | 460 - 540 mPa.s |
| Recommended HAEW | | 70 - 75 g/Eq |

Typical characteristics when combined with Araldite[®] GY 250 resin

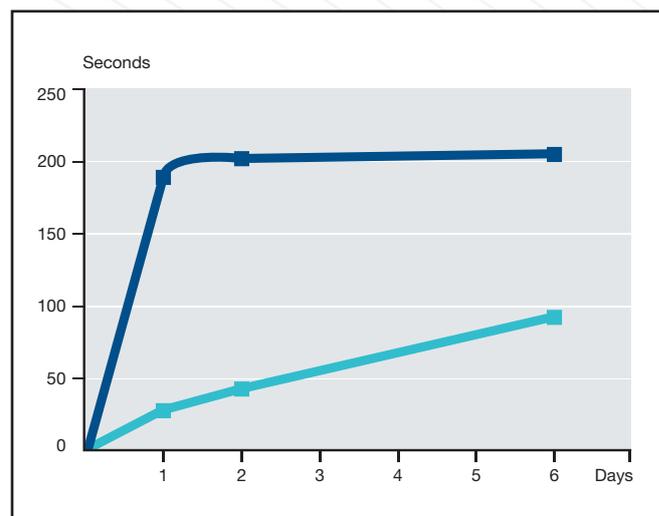
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|--------------------------|---------------|------------|
| Mix ratio | at HAEW = 155 | 40 : 100 |
| Solid content of the mix | | 100 % |
| Pot life | at 23°C | 15 minutes |
| Tack free time | at 23°C | ~ 2 hours |
| | at 5°C | ~ 4 hours |

Cure speed comparison in combination with Araldite[®] GY 783



■ Through cure time at 5°C ■ Dust free cure time at 5°C

Pendulum hardness at different temperatures in combination with Araldite[®] GY 250



■ Days of cure at 23°C ■ Days of cure at 5°C

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Huntsman Advanced Materials

Our Advanced Materials division is a leading global chemical solutions provider with a long heritage of pioneering technologically advanced epoxy, acrylic and polyurethane-based polymer products.

Our capabilities in high-performance adhesives and composites, delivered by more than 1 600 associates, serve over 2 000 global customers with innovative, tailor-made solutions and more than 1 500 products which address global engineering challenges.

Global presence – 13 manufacturing sites



Serving worldwide coatings and construction industries

As a global partner and innovator, we have been providing knowledge based epoxy and specialty additive technologies to the coatings and construction industries for more than 60 years. Our unique portfolio includes a broad range of epoxy resins and reactive diluents, hardeners, crosslinkers and matting agents. It appeals to formulators, chemists and scientists who want to be at the forefront of innovation in areas such as:

Coatings for metallic and mineral substrates

Primers, undercoats, topcoats, heavy-duty corrosion protection, powder coatings, potable water and food industry coatings, waterborne coatings, chemical resistant coatings.

Building protection

Sealers, flexible and elastic coatings, mortars, injection resins, industrial flooring, chemical anchoring.

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