

# UCON XL Quenchants

## Product Description

UCON™ XL quenchants are a new series of nonflammable, aqueous solutions of a liquid organic polymer and a non-nitrite-containing corrosion inhibitor. Like all UCON quenchants, the organic polymers are completely soluble in water and produce clear, homogeneous solutions. The new XL series provides superior corrosion protection for a variety of metals, including steel, aluminum, brass, copper, and iron. UCON XL quenchants exhibit cooling properties similar to other products in the UCON line. All XL products are color stable and are completely interchangeable with all other UCON quenchants.

The XL series of UCON quenchants includes three products:

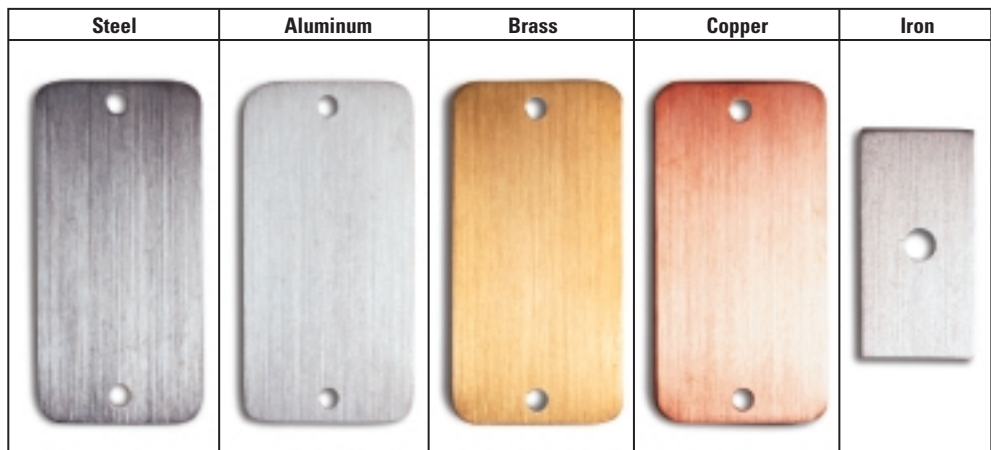
- UCON A-XL
- UCON E-XL
- UCON RL-XL

## Features and Benefits

### Corrosion Protection

UCON XL Quenchants are designed to provide superior corrosion protection for steel, iron, aluminum, brass, and copper. These products pass both ASTM G 31 and ASTM D 665A.

**Figure 1: 240 Hour Corrosion Study, ASTM G31  
UCON RL-XL Quenchant, 20%**



Corrosion coupons submerged in 20% UCON RL-XL quenchant for 240 hours at 70°C. No corrosion or tarnishing was observed on any metal.

## Features and Benefits

### Advantages and Features

- UCON XL Quenchants have a National Fire Protection Association (NFPA) rating of:  
 Health = 0  
 Flammability = 0  
 Reactivity = 0
- The optimum operating conditions for a specific metal or part may be determined by control of concentration, bath temperature, and/or agitation.
- UCON XL Quenchants are compatible with all other UCON Quenchant products.
- UCON XL Quenchants have lower deterioration and/or oxidation rates than PVA and soluble oil, minimizing replacement control. The major make-up requirement is for water lost by evaporation.
- UCON XL Quenchants eliminate the smoke, soot, and residues common to oil quenchants. Equipment maintenance and plant cleanliness are easier to achieve.
- UCON XL Quenchants are fully soluble in water. They are resistant to bacterial growth, exhibit low Biochemical Oxygen Demand (BOD), and are essentially non-toxic to bluegill sunfish.
- UCON XL Quenchants will freeze below 0°C (32°F). They should be thawed to room temperature and mixed before use. The products will not be affected in any way.

## Typical Properties

Property <sup>†</sup>	UQA-XL	UQE-XL	UQRL-XL
Weight per Gallon @20°C	9.06 lbs.	8.89 lbs.	8.90 lbs.
Specific Gravity @ 20/20°C	1.087	1.068	1.069
Flash Point, ASTM D93	None	None	None
Freeze Point	-13°F	20°F	19°F
Viscosity @ 100°F	513-626 cS	240-296 cS	229-280 cS
pH Range, 50% aq.	7.5–9.0	7.5–9.0	7.5–9.0

<sup>†</sup>Typical properties, not to be construed as specifications

## Product Description

### UCON Quenchant A-XL

UCON Quenchant A-XL is ideally suited to function uniformly in the heat transfer range covered by water to medium-speed oils. This makes it readily adaptable to induction and flame hardening, both spray quench and immersion, for such items as gears, crankshafts, camshafts, and other pieces of intricate geometry and different metallurgy. UCON Quenchant A-XL may follow either oxidizing or protective atmosphere furnaces of shaker, pit, rotary or continuous design. Compared to water-quenching, UCON Quenchant A-XL reduces residual stresses in aluminum alloys, resulting in straighter work pieces with uniform mechanical properties.

UCON Quenchant A-XL is suitable for use in the hardening of:

- forged and cast steels
- cast irons
- carbon and alloy steels by flames, induction, and submerged induction heating
- wrought, cast, and forged aluminum alloys

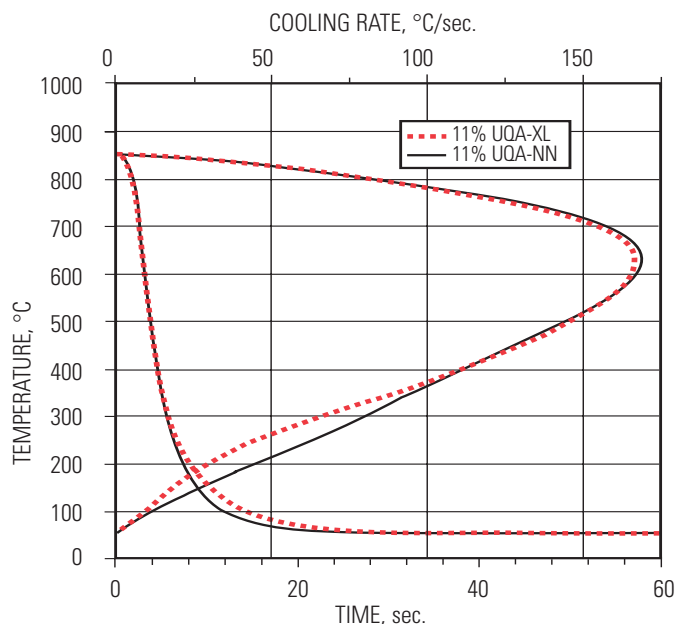
### UCON Quenchant E-XL

UCON Quenchant E-XL can be used for quenching of high carbon and most alloy grades of steel associated with typical oil quenching. UCON Quenchant E-XL is adaptable to induction and flame hardening, both spray quench and immersion, for a high alloy with an intricate geometry. This includes the nodular, malleable, and cast irons. UCON Quenchant E-XL will follow oxidizing, neutral, and protective atmosphere furnaces of shaker, rotary batch or continuous design. It can be used for direct quenching from the forge; for continuous cast quenching; and for general hardening of forged and cast steels, and cast irons.

UCON Quenchant E-XL is suitable for use in the hardening of:

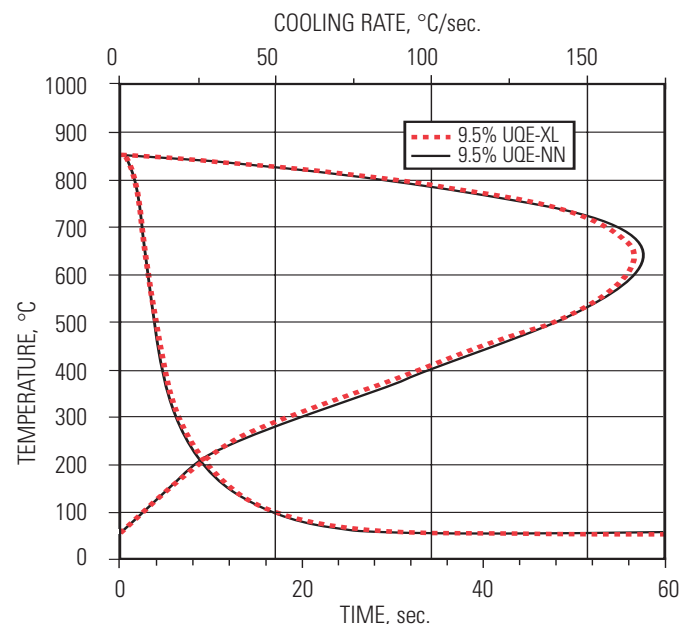
- large alloy parts from tilt-top, car-bottom and pit furnaces
- forged parts that are quenched directly from the forge
- sensitive alloys and shapes heated by induction
- parts processed from continuous and batch-furnace operations employing gas-fired, neutral, and carburizing-carbonitriding atmospheres requiring oil quenching rates

**Figure 2: Cooling Performance —  
11% UCON A-NN and UCON A-XL Quenchants**



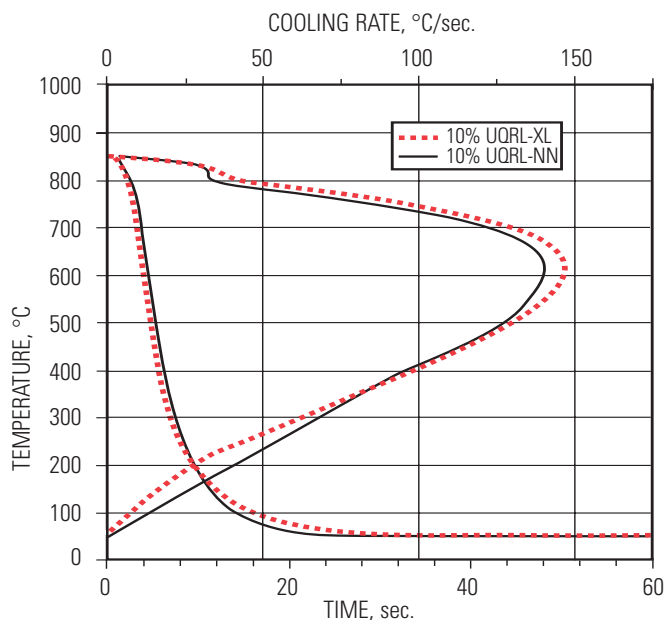
Comparison of cooling performance at 11% UCON A-NN Quenchant and UCON A-XL Quenchant at 47°C

**Figure 3: Cooling Performance —  
9.5% UCON E-NN and UCON E-XL Quenchants**



Comparison of cooling performance of 9.5% UCON E-NN Quenchant and UCON E-XL Quenchant at 47°C

**Figure 4: Cooling Performance—  
10% UCON RL-NN and UCON RL-XL Quenchants**



Comparison of cooling performance of 10% UCON RL-NN Quenchant and new UCON RL-XL Quenchant at 49°C.

## UCON Quenchant RL-XL

UCON Quenchant RL-XL is used for quenching of medium- to high-carbon steel and alloy steels of most grades, including 300 and 400 series stainless steels. UCON Quenchant RL-XL is readily adapted to induction hardening, both spray and immersion quenching, for such items as spline shafts, gears, crankshafts, camshafts, and other pieces of intricate geometry and different metallurgy. UCON Quenchant RL-XL may follow oxidizing, neutral, or protective atmosphere furnaces of shaker, rotary, batch or continuous design. These quenchants may be used for direct quenching from the forge; for continuous cast quenching; and for general hardening of forged and cast steels, and cast irons.

UCON Quenchant RL-XL is suitable for use in the hardening of:

- large alloy parts from tilt-top, car-bottom and pit furnaces
- forged parts that are quenched directly from the forge
- sensitive shapes and alloys heated by induction
- parts processed from continuous and batch-furnace operations employing gas-fired, neutral, and carburizing-carbonitriding atmospheres

## Compatibility

All UCON XL Quenchants are compatible with several very effective bactericides. UCON XL Quenchants are designed to minimize foaming, but if additional foam control is needed, UCON Foam Control Agent 200 is available. Relatively high concentrations of hard metal ions do not pose a problem for these products.

## For More Information

Please contact the Dow office nearest you for more detailed application information and product data for UCON Quenchants.

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In Other Global Areas: call 1-989-832-1560 • fax 1-989-832-1465

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