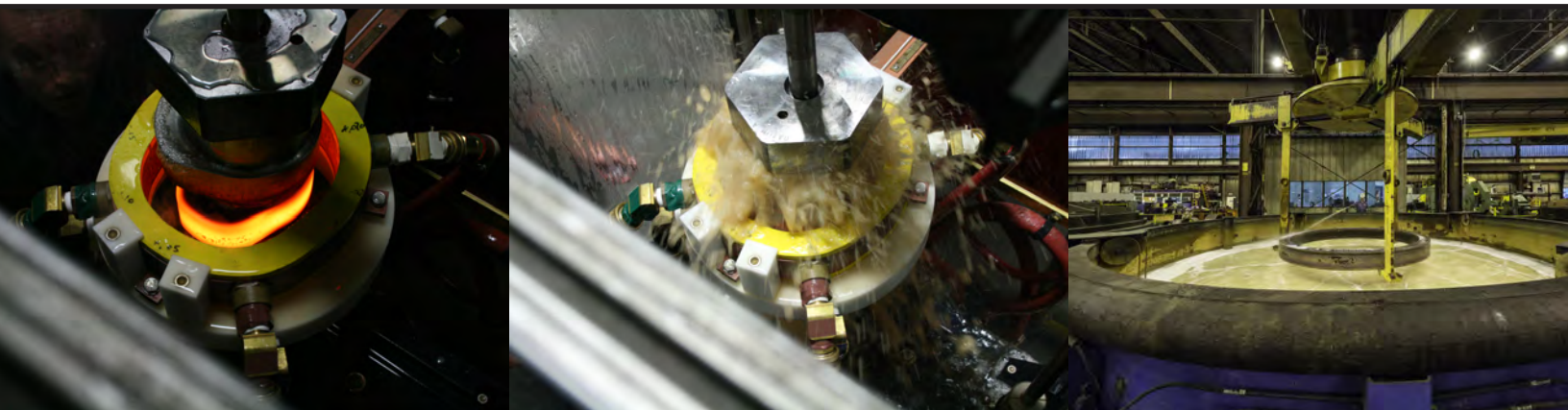




# DOW® UCON QUENCHANT HT

## POLYMERIC QUENCHANTS



UCON™ Quenchant HT is a nonflammable polymeric quenchant manufactured by The Dow Chemical Company. It is an aqueous solution of a liquid organic polymer and a corrosion inhibitor. The organic polymer is soluble in water and produces a homogeneous solution. At temperatures above 88°C (190°F), however, the polymer separates from water as an insoluble phase.



When hot metal is quenched in a diluted solution of UCON Quenchant HT, a film of the liquid organic polymer is deposited on the surface of the hot metal. The rate at which the metal is cooled is governed, in part, by the thickness of the polymer-rich film. The thickness of this film is controlled by the concentration of UCON Quenchant HT in the quench bath.

The cooling rate is also controlled by adjusting the quench bath temperature and/or the rate of agitation. The major difference between UCON Quenchant HT and other UCON Quenchants is the higher separation temperature of the former. This provides greater flexibility in the selection of initial bath temperature and in the permissible run-out temperature during the quench cycle.

## APPLICATIONS

- Hardening large alloy parts from tilt-top furnaces that previously required an oil quench.
- Hardening forged parts that are quenched directly where higher bath temperatures are required.
- Integral-quench furnaces requiring carburizing atmospheres.
- Atmosphere furnaces containing chute quenching systems.



## PERFORMANCE

The broader temperature range for UCON Quenchant HT makes it adaptable to batchtype integral quench furnaces. However, because of variations in equipment design, each installation will require individual attention to provide satisfactory performance.

UCON Quenchant HT is readily adapted to induction hardening, both spray quench and immersion, for such items as gears, crankshafts, camshafts, and other pieces of intricate geometry and different metallurgy.

UCON Quenchant HT may follow either oxidizing or protective atmosphere furnaces of shaker, rotary or continuous design. It may be used for direct quenching from the forge; for continuous cast quenching; and for general harding of forged and cast steels, and cast irons.

## BENEFITS

- FM Approvals has classified UCON Quenchant HT as “FM Approved” as tested against the latest testing criteria.
- The optimum operating conditions for a specific metal or part may be determined by control of concentration, bath temperature, and/or agitation.
- UCON Quenchant HT minimizes drag-out because of its higher resolutioning temperature. The major make-up requirement is for water lost by evaporation.
- UCON Quenchant HT eliminates the smoke, soot and residues common to oil quenchant. Equipment maintenance and plant cleanliness are easier to achieve and maintain.
- UCON Quenchant HT is soluble in water and is resistant to bacterial growth.
- UCON Quenchant HT will freeze below 0°C (32°F). It should be thawed to room temperature and mixed before use. The product will not be affected in any way.

## TYPICAL PHYSICAL PROPERTIES†

Weight per Gallon @ 20°C, lb

Specific Gravity at 20/20°C

Flash Point, Cleveland Open Cup, ASTM D 92

Pour Point, °C (°F)

Rust Inhibition, ASTM D 665A

Viscosity at 100°F (37.8°C), SUS

### UCON Quenchant HT

9.18

1.102

None

-20 (-3)

Pass

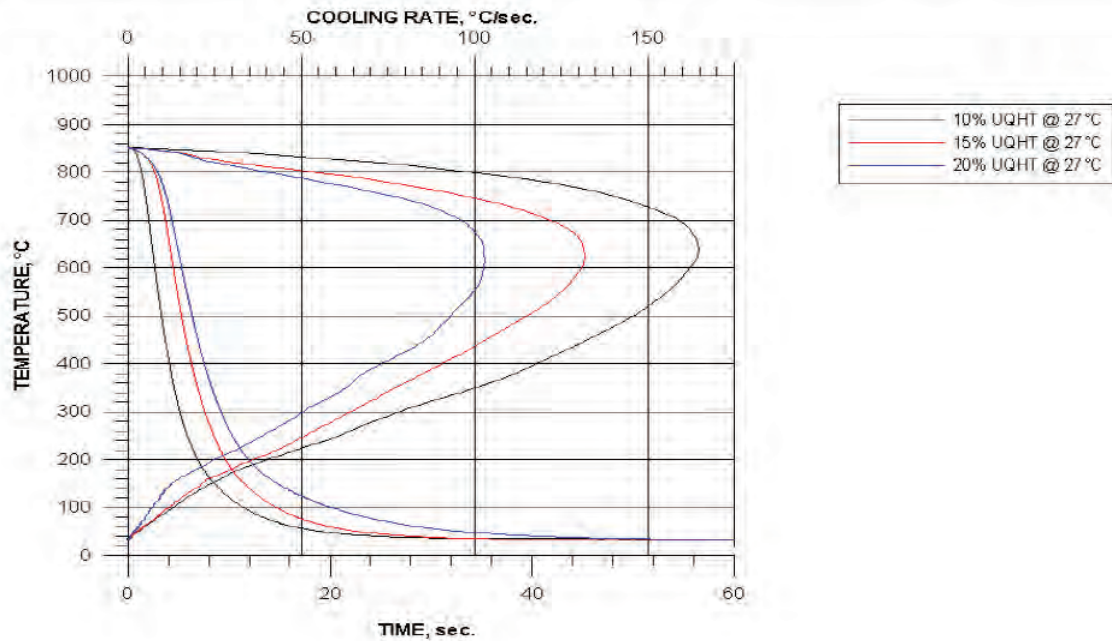
2700 - 3300

†Typical physical properties, not to be construed as specifications

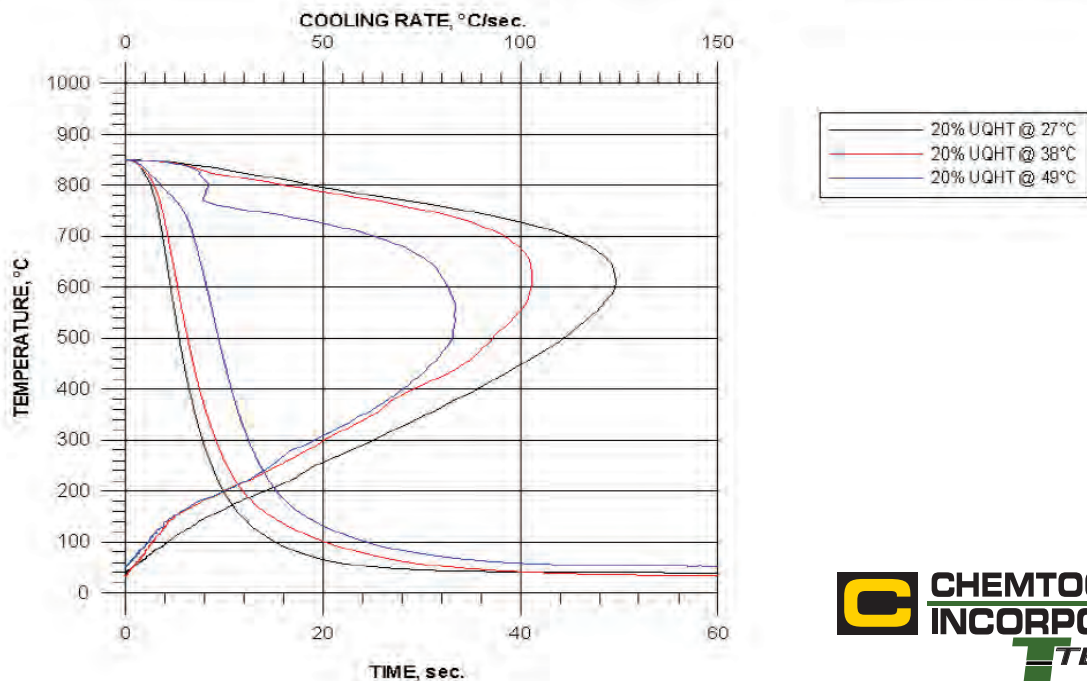
# COOLING CURVES

Figures 1 and 2 illustrate the rate of cooling achieved with UCON Quenchant HT in laboratory tests using a 750 mm x 12.5 mm (dia.) Inconel probe fitted with a Type K thermocouple. Figure 1 illustrates the influence of variations in concentration at constant temperature and agitation. Figure 2 illustrates the change in cooling rate at elevated bath temperatures, again, with constant agitation.

**Figure 1 ● Concentration Effect on Cooling and Cooling Rate for UCON™ Quenchant HT**  
Agitation Rate = 15 L/min.



**Figure 2 ● Temperature Effect on Cooling and Cooling Rate for UCON™ Quenchant HT**  
Agitation Rate = 15 L/min.





## THE PRODUCT

# DOW® UCON QUENCHANT HT

### PRODUCT USE PRECAUTIONS

Steam and small amounts of organic vapors can be evolved during quenching. The vapors could be irritating and toxic if allowed to accumulate. Adequate workplace ventilation should be provided to prevent irritation and accumulation of vapors; this may require use of a special, local ventilation system in the immediate area where vapors are released. Where this product is burned under conditions of relatively complete combustion, the major products are carbon dioxide and water vapor. Where this material is subjected to overheating (thermal degradation) but does not burn, the degradation products can be such things as organic acids (formic, acetic acids), aldehydes, esters, ketones, etc. These vapors or fumes can be highly irritating to the eyes, nose, and throat. Special ventilation may be needed. In normal use, no respiratory protective equipment should be needed, but self-contained breathing apparatus should be available for use in emergencies. Small amounts of organic vapors can be formed by oxidation of quenchant. These vapors could be irritating or toxic if released in a poorly ventilated area. Good ventilation should be maintained in the area around quench tanks.

### PRODUCT STEWARDSHIP

Dow encourages its customers and potential users to review their applications from the standpoint of human health and environmental aspects. To help ensure that Dow products are not used in ways for which they are not intended or tested, Dow personnel will assist customers in dealing with environmental and product safety considerations. Dow literature, including Material Safety Data Sheets, should be consulted prior to the use.

#### HEALTH AND SAFETY

- Please consult the latest Safety Data Sheet for recommended safe handling and use of this product.

#### SHIPPING AVAILABILITY

- UCON QUENCHANT HT (#1422100000) is available in:
- 35 pound pails
  - 120 pound kegs
  - 400 pound drums
  - Bulk quantities

**CHEMTOOL INCORPORATED IS THE N. AMERICAN SUPPLIER OF UCON QUENCHANT**



**Call 815-957-4140 or go to [www.tenaxol.com](http://www.tenaxol.com)**

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