

# **KDT HTT 1800**

Heat Curable Coating Resin (Product Code: K-1034)

KDT HTT 1800 is a pale yellow, low viscosity liquid polysilazane-based coating resin that is specially designed for use in the formulation of heatcurable ceramic coatings. KDT HTT 1800 is supplied as a 100% "solids" liquid of low viscosity, and rapidly solidifies upon heating to 200 - 250 °C. Solidification can be achieved at lower temperatures with the addition of a free radical initiator such as dicumyl peroxide. KDT HTT 1800 can be blended with a variety of pigments, such as metal powders (zinc,



Exhaust Manifold Coated with KDT HTT 1800

aluminum, stainless steel), ceramic powders (silicon carbide, aluminum oxide, silicon nitride), or the like. Such compositions can be formulated with or without solvent and can be applied by dipping, spraying, or brushing onto a variety of substrates – metal, glass, ceramic, polymeric. For ultra-high temperature formulations, the coated part is then heated to at least 850 °F to promote conversion of the polymer to ceramic. Depending on the exact formulation, coating operating temperatures of 900 °C or above can be achieved.

## **Major Applications:**

High Temperature Coatings and Thermally Stable Corrosion Coatings

# **Cure Conditions:**

Depending on the free radical initiator employed, cure from liquid to solid can be accomplished in times ranging from 1 to 90 minutes over a temperature range of 100 °C to 180 °C. The peroxides are typically dissolved in solvent free polymer at the 0.5 to 1.0wt% level based on the weight of polymer employed. Cure without the use of a peroxide can be effected by heating to 200 - 250 °C.

Physical Properties of Resin				
Color	Clear to pale yellow liquid			
% Resin	100 % solids as a liquid			
Flash Point	29 °C [84 °F]			
Density of Liquid	$1.020 \text{ g/cm}^3$			
Density of Cured	$1.120 \text{ g/cm}^3$			
Material				
Density of Ceramic	$2.400 \text{ g/cm}^3$			
Viscosity	80 cps @ 19 °C [67 °F]			



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Typical HTT 1800 Ceramic Coating Properties			
Color	Variable	Pencil Hardness	> 9H
Finish	Matte to Satin	Hot Adhesion	100 %
% Resin Solids	10 - 60	Chemical Resistance	Good
Film Thickness	10 – 300 µm	Thermal Resistance	800 °C
VOC	Depends on formulation	Thermal Shock	Fair

### **Formulation and Application:**

KDT HTT 1800 is easily formulated into a corrosion resistant, high temperature ceramic coating. It is typically added at 10 - 60 wt. % and is compatible with a wide array of solvents including alkanes, aromatic hydrocarbons, ethers, ketones, esters, etc. In addition, HTT 1800 may be blended with a variety of ceramic and metal powders and other coating additives. Once formulated, these coatings can be applied by conventional spray, dip, or brush application. The coatings are dry-to-touch in approximately 1 h and cured by heating at 150 °C for 30 minutes. Heating to temperatures above 700 °C converts the HTT 1800 to a ceramic.

### **Clean Up:**

Clean tools immediately after use with acetone or mineral spirits. Solvent cleaning can be followed by a wash with soapy water. Cured material cannot be removed with solvent. Proper clean-up of equipment is essential.

### Handling:

**Storage Life:** Minimum of 2 years for unopened containers.

**Pot Life:** Usable life will be determined by the precautions taken to keep containers tightly sealed and protected from moisture.

#### Solvents:

KDT HTT 1800 is miscible with dry aprotic solvents such as alkanes, aromatic hydrocarbons, ethers, ketones, and esters. KDT HTT 1800 is hydrolytically sensitive and will slowly generate ammonia upon contact with moisture. The polymer will also react with other protic substances such as acids, bases, and alcohols.

#### Safety:

Use safety glasses and adequate ventilation. Protect skin from exposure using gloves and appropriate clothing. Seek medical attention if ingestion or overexposure is suspected. Keep uncured product from flame, all ignition sources, and moisture. This product is intended for professional use by persons familiar with this product data sheet, the Material Safety Data Sheet (MSDS) that accompanies product shipments, and applicable health, safety, and environmental practices and regulations. Contact KDT for advice concerning this product's suitability for specific applications.

#### **Disclaimer:**

Information on this product sheet is subject to change without notice as a result of experience and ongoing product development. It is the user's responsibility to verify that this sheet is current prior to use. The user accepts all risk associated with any use of this product for any purpose other than as recommended herein.

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