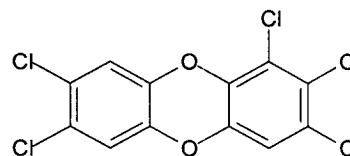


# Certificate of Analysis

## 1,2,3,7,8-Pentachlorodibenzo-p-dioxin

**Catalog Number:** ED-950-C  
**Lot Number:** ER091703-01  
**CAS Number:** 40321-76-4  
**Chemical Formula:** C<sub>12</sub>H<sub>3</sub>O<sub>2</sub>Cl<sub>5</sub>  
**Molecular Weight:** 356.42  
**Chemical Purity:** 99%  
**Storage:** Protect from light, store at room temperature.  
**Handling:** See MSDS for handling instructions.  
**Intended Use:** For laboratory use only.




### *Spectral and Physical Data*

#### **TLC Analysis**

Neutral Alumina, Methanol::Ethyl Acetate (30::70)  
Single Spot, R<sub>f</sub> = 0.66

Cerilliant certifies that this material meets or exceeds the purity value stated in this data sheet. Purity and identity are established using a variety of chromatographic and spectroscopic methods. The results of these analyses are included in this data package.

**Authorized Signature:**

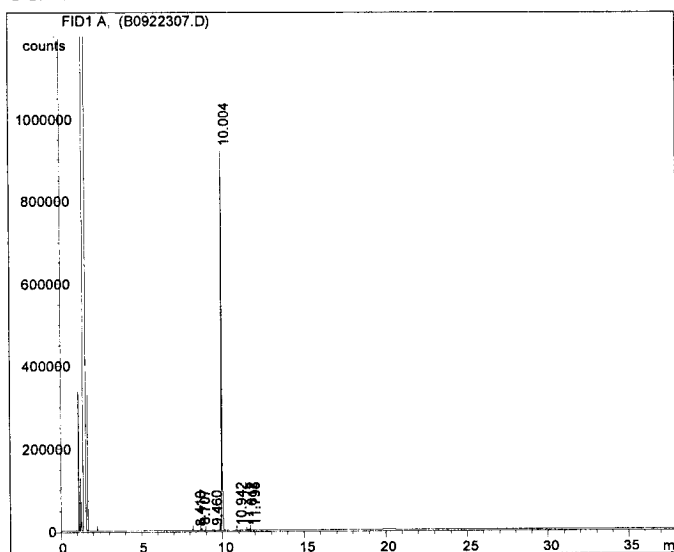
  
\_\_\_\_\_  
Joseph Rettinger, Quality Assurance Director

*April 20, 2004*

\_\_\_\_\_  
Date

*Spectral and Physical Data (cont.)*

**GC/FID**

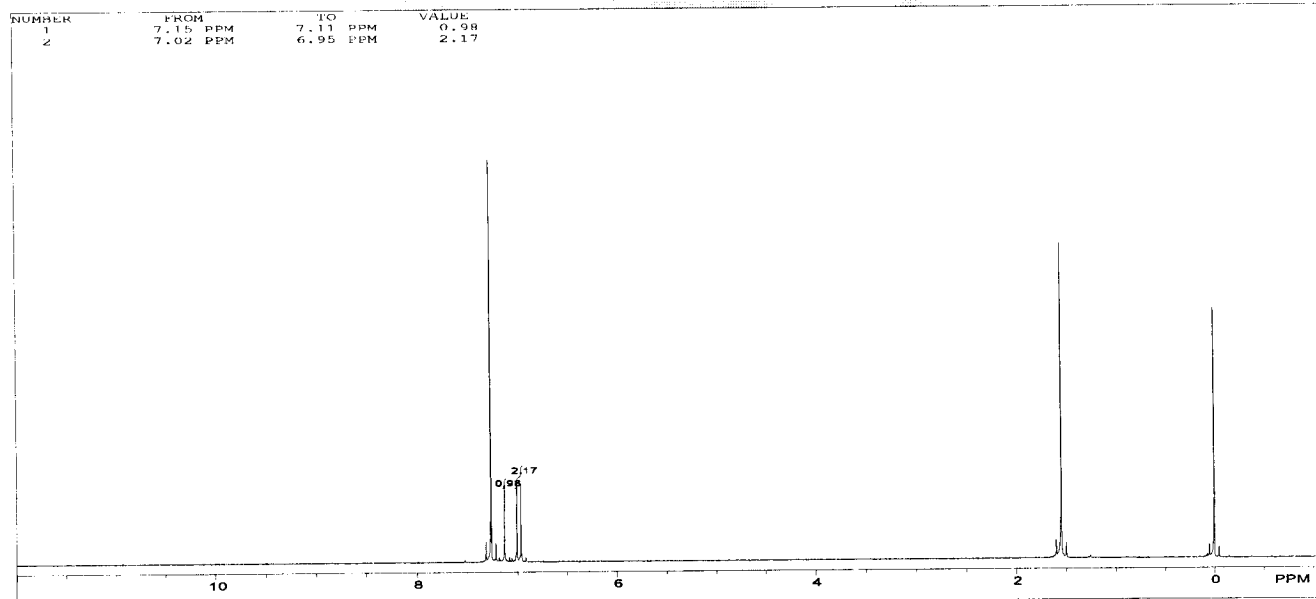


**Column:** DB-5ms, 30 m x 0.53 mm ID, 1.5 µm film thickness  
**Temp Program:** 40°C to 240°C at 40°C/min  
 240°C to 280°C at 10°C/min hold 29 min  
**Injector Temp:** Cool-on-Column  
**Detector Temp:** 325°C  
  
**Data File Name:** C:\HPCHEM2\DATA\B0922307.D  
**Operator:** ACB  
**Instrument:** GC#2  
**Sample Name:** ER091703-01  
**Method File:** B01C.M  
**Acquired:** September 22, 2003 9:55 AM

Peak #	Ret Time	Area	Height	Area %
1	8.41	496	181	0.02
2	8.71	13971	4765	0.42
3	9.46	1771	548	0.05
4	10.00	3275970	921205	99.12
5	10.94	1184	281	0.04
6	11.61	9907	1362	0.30
7	11.80	1620	315	0.05

**<sup>1</sup>H NMR**

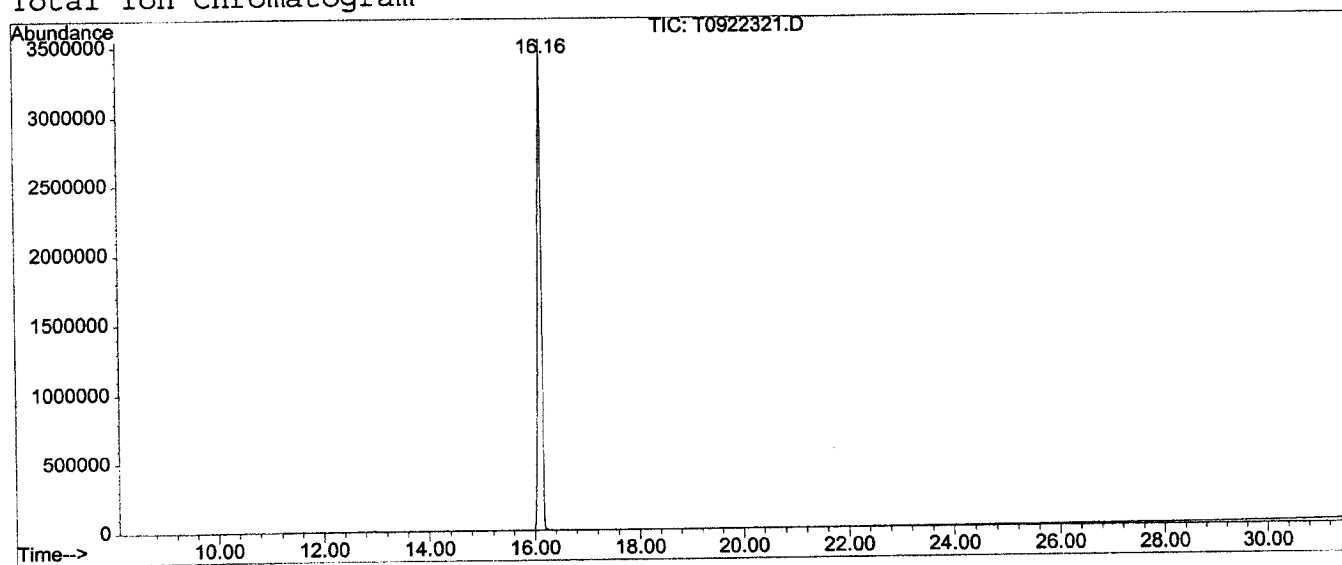
**Instrument:** Bruker DRX400  
**Solvent:** Chloroform-D  
**Reference:** TMS



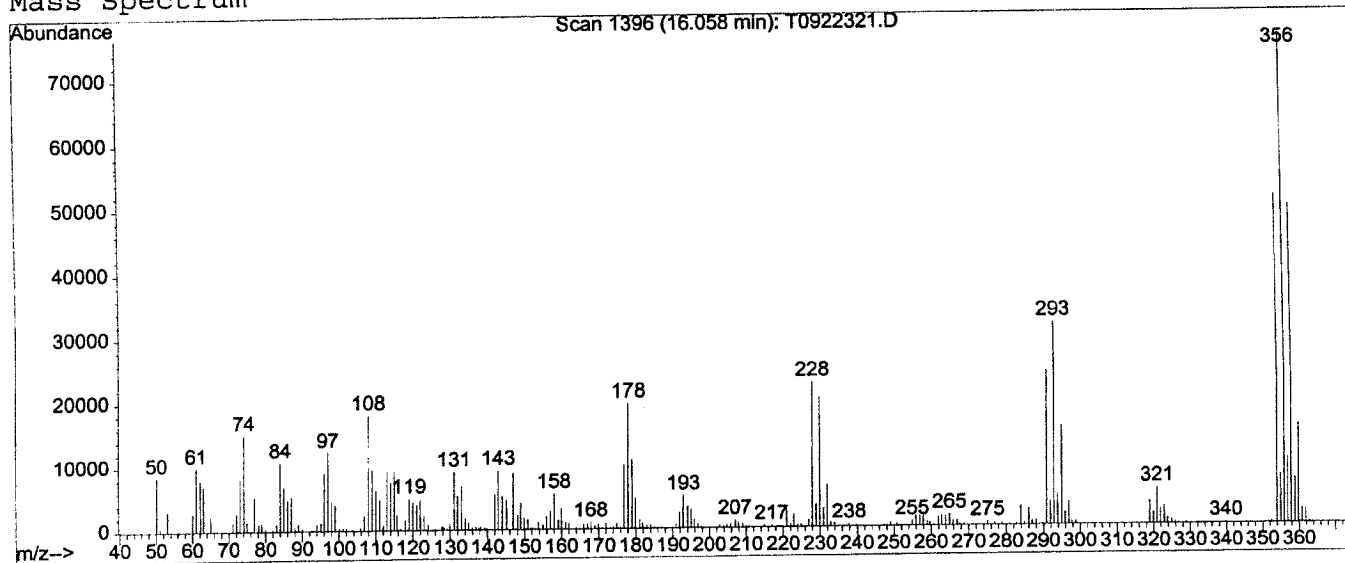
Compound Name : 1,2,3,7,8-Pentachlorodibenzo-p-dioxin  
Lot Number : ER091703-01  
Instrument : Agilent 5973N MSD/6890N GC  
Operator-Inst ID : NLC - C10476  
Date Reported : Thu Sep 25 14:37:14 2003  
Column Type : DB-5ms, 30m x 0.25mm ID, 0.25um film thickness  
Temp. Program : 140°C to 200°C @40°C/min, 200°C to 320°C @4°C/min  
Injector Temp. : Cool on-column  
Carrier Gas : Helium  
Flow Rate (mL/min) : 0.80 mL/min  
Transfer Line Temp. : 280°C

Scan Range : 50-550

### Total Ion Chromatogram



### Mass Spectrum



**MATERIAL SAFETY DATA SHEET**
**IDENTITY:** 1,2,3,7,8-Pentachlorodibenzo-p-dioxin

**SECTION I**
**Manufacturer:** Cerilliant Corporation  
 811 Paloma, Suite A  
 Round Rock, TX 78664

 Emergency Telephone Number: (512) 238-9974  
 Date Prepared: April 20, 2004

**SECTION II - HAZARDOUS COMPONENTS/IDENTITY INFORMATION**

Hazardous Components	Synonyms	CAS Number	%
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	N/A	40321-76-4	100

**SECTION III – Hazard Identification**

Toxic! Dangerous to the environment. It may cause eye irritation. Allow only your most experienced personnel to work with this chemical. All non-essential personnel should leave the laboratory. Keep container tightly closed. Keep away from food, drink, and animal feeding stuffs. When using do not eat, drink, or smoke. Avoid contact with skin and eyes. After contact with skin, take off immediately all contaminated clothing, and wash, immediately with plenty of soap and water. Do not empty into drains; dispose of this material and its container to hazardous or special waste collection point. Wear suitable protective clothing, gloves, and eye/face protection.

**SECTION IV – First Aid Measures**

**Eye Contact:** Flush eyes with copious amounts of water for a minimum of 15 minutes and transport to a medical facility.  
**Ingestion:** Do not induce vomiting. Give victim large quantities of liquid and transport to a medical facility.  
**Skin Contact:** Wash affected areas with copious amounts of water and transport to a medical facility.  
**Inhalation:** Remove to fresh air. If breathing is disturbed, give artificial respiration while transporting to a medical facility.

**SECTION V- Fire Fighting Measures**
**Flash Point:** N/A  
**Method Used:** N/A

**Flammable Limits**  
 LEL: N/A UEL: N/A

**Extinguishing Media:** Dry chemical, carbon dioxide or Halon extinguisher

**Special Fire Fighting Procedures:** Wear SCBA and protective clothing to prevent contact with skin and eyes.

**Unusual Fire and Explosion Hazards:** N/A

**SECTION VI- Accidental Release Measures**

Evacuate area. Remove all sources of ignition. Use inert absorbent to pick up all spilled material. Transfer to a suitable waste container with non-sparking tools. Wash spill site with appropriate cleaning agent to removal residual traces of spilled material.

**SECTION VII- Handling and Storage**

**Handling:** Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged repeated exposure. Wash thoroughly after handling.

**Storage:** Room temperature. Protect from light. Keep container closed. Keep away from ignition sources.

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### SECTION VIII-Exposure Controls/Personal Protection

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As appropriate to quantity handled.

**Ventilation - Local Exhaust:** Use with forced ventilation.

**General Mechanical:** Normal laboratory air exchange.

**Special:** N/A

**Respiratory Protection:** NIOSH approved cartridge type respirator with organic vapor cartridges with HEPA pre-filter recommended.

**Eye Protection:** Safety glasses with side shields or chemical safety goggles.

**Protective Gloves:** Compatible chemical resistant gloves.

**Other Protective Clothing or Equipment:** Lab Coat

**Work/Hygienic Practices:** Only experienced personnel should be allowed to handle this material.

Exposure Limits				
	OSHA PEL	ACGIH TLV	DFG MAK	Other Limits
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	N/A	N/A	N/A	N/A

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### SECTION IX-Physical/Chemical Properties

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**Boiling Point (degrees C):** N/A

**Melting Point (degrees C):** N/A

**Specific Gravity (Water=1):** N/A

**Vapor Pressure (mmHg):** N/A

**Vapor Density (Air=1):** N/A

**Evaporation Rate (Butyl Acetate=1):** N/A

**Solubility in Water:** insoluble

**Appearance and Odor:** white solid

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### SECTION X-Stability and Reactivity

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**Stability:** Stable

**Conditions to Avoid:** Heat, sparks or other sources of ignition.

**Incompatible Materials:** N/A

**Hazardous Dcmp Pdts:** Toxic fumes of carbon monoxide and carbon dioxide.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid:** N/A

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### SECTION XI-Toxicological Information

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**Routes of Entry:** Inhalation? Yes    Skin? Yes    Ingestion? Yes

**Carcinogenicity:** NTP? N/A    IARC? N/A    OSHA? N/A

**Symptoms of Exposure:** N/A

**Toxicity Data:**

The toxicological properties of 1,2,3,7,8-Pentachlorodibenzo-p-dioxin have not been fully investigated. It should be assumed to have toxic effects and, therefore, procedures appropriate for the safe handling of hazardous chemicals should be followed.

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### SECTION XII-Ecological Information

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Data not available



**SECTION XIII-Disposal Considerations**

Waste materials should be disposed of under conditions that meet Federal, State, and Local environmental control regulations. Contact a licensed waste disposal specialist to dispose of this material.

**SECTION XIX- Transportation Information**

DOT Not regulated for shipping.	IATA Not regulated for shipping.
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**SECTION XV-Regulatory Information**

**EU Directives Classification**

**Symbol of Danger:** T N

**Indication of Danger:** Toxic. Dangerous for the environment.

R: 39/26/27/28 53

**Risk Statements:** Very toxic: danger of very serious irreversible effects through inhalation, in contact with skin, and if swallowed. May cause long term effects in the aquatic environment.

S: 7 13 20/21 24/25 27/28 36/37/39

**Safety Statements:** Keep container tightly closed. Keep away from food, drink, and animal feeding stuffs. When using do not eat, drink, or smoke. Avoid contact with skin and eyes. After contact with skin, take off immediately all contaminated clothing, and wash, immediately with plenty of soap and water. Do not empty into drains; dispose of this material and its container to hazardous or special waste collection point. Wear suitable protective clothing, gloves, and eye/face protection.

**SECTION XVI-Other Information**

The information contained herein is believed to be accurate and is supplied in good faith. Cerilliant Corporation makes no warranty with respect to and assumes no legal responsibility for use of or reliance upon this information. Individuals receiving this data must exercise their own judgement in determining its suitability for a particular purpose.