



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31029 **Lot No.:** A0129886

Description : 604 Phenols Calibration Mix
604 Calibration Std Phenols 2000µg/mL, Methanol, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : August 31, 2025 **Storage:** 10°C or colder

C E R T I F I E D V A L U E S

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)			
1	Phenol	2,006.0 µg/mL	+/-	11.9150	µg/mL	Gravimetric
	CAS # 108-95-2 (Lot SHBF9719V)		+/-	58.5925	µg/mL	Unstressed
	Purity 99%		+/-	71.0800	µg/mL	Stressed
2	2-Chlorophenol	2,014.0 µg/mL	+/-	11.9625	µg/mL	Gravimetric
	CAS # 95-57-8 (Lot STBF2690V)		+/-	58.8262	µg/mL	Unstressed
	Purity 99%		+/-	71.3635	µg/mL	Stressed
3	2-Nitrophenol	2,012.0 µg/mL	+/-	11.9507	µg/mL	Gravimetric
	CAS # 88-75-5 (Lot BCBH7602V)		+/-	58.7678	µg/mL	Unstressed
	Purity 99%		+/-	71.2926	µg/mL	Stressed
4	2,4-Dimethylphenol	2,002.0 µg/mL	+/-	11.8913	µg/mL	Gravimetric
	CAS # 105-67-9 (Lot 10165155)		+/-	58.4757	µg/mL	Unstressed
	Purity 99%		+/-	70.9383	µg/mL	Stressed
5	2,4-Dichlorophenol	2,004.0 µg/mL	+/-	11.9032	µg/mL	Gravimetric
	CAS # 120-83-2 (Lot BCBJ8113V)		+/-	58.5341	µg/mL	Unstressed
	Purity 99%		+/-	71.0092	µg/mL	Stressed
6	4-Chloro-3-methylphenol	2,010.0 µg/mL	+/-	11.9388	µg/mL	Gravimetric
	CAS # 59-50-7 (Lot STBC7309V)		+/-	58.7094	µg/mL	Unstressed
	Purity 99%		+/-	71.2218	µg/mL	Stressed
7	2,4,6-Trichlorophenol	2,002.0 µg/mL	+/-	11.8913	µg/mL	Gravimetric
	CAS # 88-06-2 (Lot STBF3742V)		+/-	58.4757	µg/mL	Unstressed
	Purity 99%		+/-	70.9383	µg/mL	Stressed

8	2,4-Dinitrophenol		2,000.0	µg/mL	+/-	11.8794	µg/mL	Gravimetric
	CAS #	51-28-5	(Lot STBF9439V)		+/-	58.4173	µg/mL	Unstressed
	Purity	99%			+/-	70.8674	µg/mL	Stressed
9	4-Nitrophenol		2,010.0	µg/mL	+/-	11.9388	µg/mL	Gravimetric
	CAS #	100-02-7	(Lot MKBP6945V)		+/-	58.7094	µg/mL	Unstressed
	Purity	99%			+/-	71.2218	µg/mL	Stressed
10	4,6-Dinitro-2-methylphenol (Dinitro-o-cresol)		2,012.9	µg/mL	+/-	11.9561	µg/mL	Gravimetric
	CAS #	534-52-1	(Lot LC22071V)		+/-	58.7946	µg/mL	Unstressed
	Purity	98%			+/-	71.3252	µg/mL	Stressed
11	Pentachlorophenol		2,018.0	µg/mL	+/-	11.9863	µg/mL	Gravimetric
	CAS #	87-86-5	(Lot 170306KJA)		+/-	58.9430	µg/mL	Unstressed
	Purity	99%			+/-	71.5052	µg/mL	Stressed

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

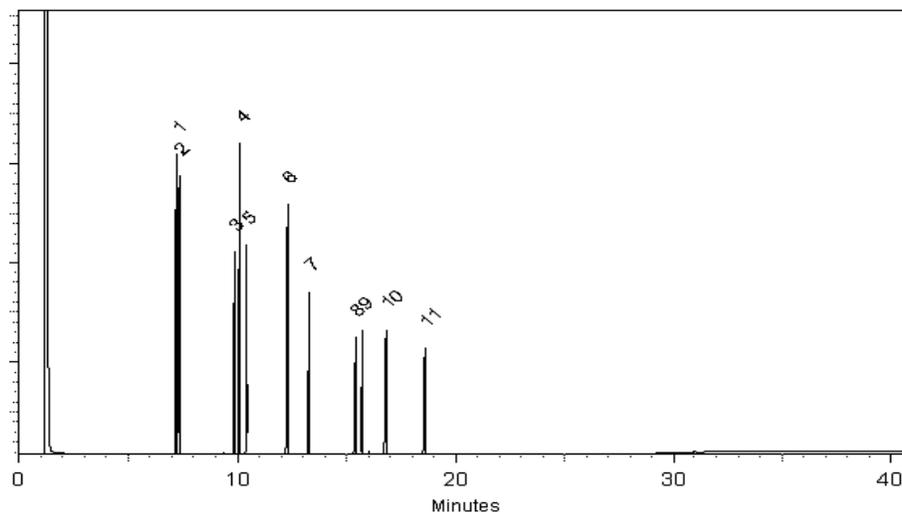
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Brandon Reish - Mix Technician

Date Mixed: 14-Aug-2017

Balance: B345965662

Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 16-Aug-2017

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO Guides 34 and 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k \sqrt{U_{gravimetric}^2 + U_{homogeneity}^2 + U_{storage\ stability}^2 + U_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

Label Conditions	Standard Conditions	Non-Standard Conditions
25°C Nominal (Room Temperature)	< 60°C	≥ 60°C up to 7 days
10°C or colder (Refrigerate)	< 40°C	≥ 40°C up to 7 days
0°C or colder (Freezer)	< 25°C	≥ 25°C up to 7 days

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Samples should be transferred into deactivated vials for handling and storage. Restek supplies deactivated vials along with most standards packed in 2 mL ampules. Due to space constraints, Restek does not supply vials for larger volume ampules. Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions. Restek will also deactivate larger volume vials from our inventory as a custom ordered item. Contact your Restek sales or customer service representative for details.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.