



Standard Practice for Sampling and Handling Aniline¹

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1. Scope

1.1 This practice covers procedures for sampling and handling aniline.

1.2 Any person sampling or handling aniline should have specific first aid instructions and equipment available for use in the event of personal contact or exposure.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see Sections 3, 4, 5, 6, 7 and 8.

2. Referenced Documents

2.1 ASTM Standards:

E 300 Practice for Sampling Industrial Chemicals²

2.2 Other Documents:

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200³

DOT Regulations, 49 CFR, Subchapter C; Parts 171-180³

3. Description of Product

3.1 Typical Properties and Characteristics (See Table 1):

3.2 *Stability*—Aniline is a stable material under normal conditions. It does not decompose at its boiling point or when exposed to high environmental temperatures for long periods. Although the vapor given off at elevated temperatures is flammable, aniline can be handled with little danger of fire. Should aniline ignite, it may be successfully extinguished with water, applied in the form of a fog or spray (see 4.2).

3.3 *Solubility*—Aniline is miscible with alcohol, ether, benzene, and most organic solvents. It is only slightly soluble in water.

3.4 Classification and Regulations:

3.4.1 Aniline is classified as a Class 6 Poison by DOT and the United Nations. As such, it must be packaged in DOT specification containers when shipped by rail, water, or high-

TABLE 1 Typical Properties and Characteristics of Aniline

Chemical names	aniline, aminobenzene, benzenamine, phenyl-amine
Common names	aniline, aniline oil blue-oil
Empirical formula	C ₆ H ₅ NH ₂
Physical form	oily liquid at normal temperature
Color	colorless to light yellow (clear)
Light sensitivity	tends to become amber brown in color upon exposure to air and light
Boiling point	184.2°C (364°F) at 760 mm Hg
Specific gravity	1.022 at 20/4°C
Solidification point, anhydrous basis, min	-6.2°C (21°F)
Explosive limit lower	1.3 volume % in air
Flash point	
Closed cup	70.0°C (158°F)
Open cup	75.6°C (168°F)
Ignition temperature	1418°F ^A
Odor threshold	0.5 ppm ^A
Poisonous gas produced	when heated ^A

^AWeiss, G. *Hazardous Chemicals Data Book*, Second Edition.

way, and all of the DOT Regulations regarding loading, unloading, handling, labeling, and other functions must be followed.

3.4.2 Department of Transportation (DOT) Regulations regarding the shipping of this chemical are specified in 49CFR. Regulations include the handling of aniline packages and return of empty containers. All containers should carry an identifying label or stencil and must bear the DOT POISON label. Aniline is ordinarily transported in tank cars, tank trucks, or metal drums. Sample shipped by air must be packaged to comply with IATA regulations.

3.5 *Toxicity*—Although aniline is highly toxic, it may be handled safely if proper precautions are observed. The odor of aniline can be positively detected at 1.1 ppm in the atmosphere by 50 % of people.⁴ Avoid contact with skin. Maintain adequate ventilation.

4. Hazards

4.1 Consult current OSHA regulations, supplier's Material Safety Data Sheets, and local regulations for all materials utilized in this practice.

4.2 Health:

4.2.1 Aniline is highly toxic and may enter the body easily and rapidly by absorption through the skin, by ingestion, or by

¹ This practice is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.08 on Handling and Sampling Aromatic and Cyclic Hydrocarbons.

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² *Annual Book of ASTM Standards*, Vol 15.05.

³ Available from Superintendent of Documents, Government Printing Office, Washington, DC 20402.

⁴ "Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution," *Journal of Applied Toxicology*, August 1983.