

# Safety Data Sheet

# 3'-Methyl-4-amino- azobenzene

Division of Safety  
National Institutes  
of Health



## WARNING!

THIS COMPOUND IS ABSORBED THROUGH THE INTESTINAL TRACT. IT IS MILDLY TOXIC AND CARCINOGENIC. AVOID FORMATION AND BREATHING OF AEROSOLS.

LABORATORY OPERATIONS SHOULD BE CONDUCTED IN A FUME HOOD, GLOVE BOX, OR VENTILATED CABINET.

AVOID SKIN CONTACT: IF EXPOSED, WASH WITH SOAP AND WATER.

FOR EYE EXPOSURE, IRRIGATE IMMEDIATELY WITH LARGE AMOUNTS OF WATER. FOR INGESTION, DRINK WATER. REFER FOR GASTRIC LAVAGE. FOR INHALATION, REMOVE VICTIM PROMPTLY TO CLEAN AIR. ADMINISTER RESCUE BREATHING IF NECESSARY. REFER TO PHYSICIAN.

IN CASE OF LABORATORY SPILL, WEAR PROTECTIVE CLOTHING DURING CLEANUP. AVOID SKIN CONTACT OR BREATHING OF AEROSOLS. USE ORGANIC SOLVENT TO DISSOLVE COMPOUND. WASH DOWN AREA WITH SOAP AND WATER. DISPOSE OF WASTE SOLUTIONS AND MATERIALS APPROPRIATELY.

### A. Background

3'-Methyl-4-aminoazobenzene (3-MAB) is a yellow, stable, crystalline compound. It is mildly toxic (producing liver cirrhosis) and weakly carcinogenic in rats. Its only reported use has been in studies of the effect of nuclear substitution of azobenzenes on carcinogenicity.

### B. Chemical and Physical Data

1. Chemical Abstract No.: 722-23-6

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Synonyms :

Benzenamine, 4-[(3-methylphenyl)azo]- (9CI)

p-(3-Methylphenyl-azo)-aniline

p-(m-Tolylazo)-aniline

Molecular

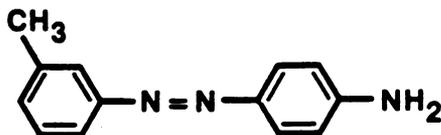
formula:

$C_{13}H_{13}N_3$

weight:

211.28

structure:



- Density: No data.
- Absorption spectroscopy: No data.
- Volatility: No data.
- Solubility: Soluble in methanol, petroleum ether, and most common organic solvents.
- Description, appearance: Yellow crystalline compound.
- Boiling point: No data.
- Melting point: 89-91°C.
- Stability: No data, but probably stable under ordinary conditions.
- Chemical reactivity: No data, but probably undergoes reactions characteristic of aminoazo compounds (reduction to hydrazo analog, aminotoluene, and p-phenylenediamine; oxidation by hydrogen peroxide, organic peroxide, and dichromate).
- Flash point: No data.
- Autoignition temperature: No data.
- Explosive limits in air: No data.

Fire, Explosion, and Reactivity Hazard Data

- 3-MAB does not require special fire-fighting procedures or equipment and does not present unusual fire and explosive hazards.
- No conditions contributing to instability are known.
- No incompatibilities have been reported.

4. 3-MAB does not require nonspark equipment. When handled in flammable solvents, the precautions required for such solvents apply.

### Operational Procedures

The NIH Guidelines for the Laboratory Use of Chemical Carcinogens describe operational practices to be followed when potentially carcinogenic chemicals are used in NIH laboratories. The Guidelines should be consulted to identify the proper use conditions required and specific controls to be implemented during normal and complex operations or manipulations involving 3-MAB.

1. Chemical inactivation: No validated method reported.
2. Decontamination: Turn off equipment that could be affected by 3-MAB or the materials used for cleanup. If more than 10 g has been spilled or if there is any uncertainty regarding the procedures to be followed for decontamination, call the NIH Fire Department (dial 116) for assistance. Wash surfaces with copious quantities of water. Glassware should be rinsed (in a hood) with an organic solvent, followed by soap and water. Animal cages should be washed with water.
3. Disposal: No waste streams containing 3-MAB shall be disposed of in sinks or general refuse. Surplus 3-MAB or chemical waste streams contaminated with 3-MAB shall be handled as hazardous chemical waste and disposed of in accordance with the NIH chemical waste disposal system. Nonchemical waste (e.g., animal carcasses and bedding) containing 3-MAB shall be handled and packaged for incineration in accordance with the NIH medical-pathological waste disposal system. Potentially infectious waste (e.g., tissue cultures) containing 3-MAB shall be disinfected by heat using a standard autoclave treatment and packaged for incineration, as above. Burnable waste (e.g., absorbent bench top liners) minimally contaminated with 3-MAB shall be handled as potentially infectious waste and packaged for incineration, as above. Absorbent materials (e.g., associated with spill cleanup) grossly contaminated shall be handled in accordance with the chemical waste disposal system. Radioactive waste containing 3-MAB shall be handled in accordance with the NIH radioactive waste disposal system.
4. Storage: Store in sealed ampoules or screw-capped bottles (or vials) with Teflon cap liners.

### Monitoring and Measurement Procedures Including Direct Field Measurements and Sampling for Subsequent Laboratory Analysis

1. Sampling: No data.
2. Separation and analysis: No specific information on either separation or analysis of 3-MAB has been reported. It is likely

that methods developed for other lipid-soluble azo dyes can be adapted for use with 3-MAB. Such methods include TLC and spectrophotometric determination (Hoodless et al., 1971; Topham and Westrop, 1964) and acid extraction from tissue, alumina column chromatography, and colorimetry (Miller and Baumann, 1945).

### Biological Effects (Animal and Human)

1. Absorption: Absorbed from the gastrointestinal tract and probably (in analogy with similar compounds such as o-aminoazotoluene) through the skin.
2. Distribution: No data.
3. Metabolism and excretion: No data. Again, in analogy with other aminoazo compounds, 3-MAB is probably metabolized to hydroxylated and azo-reduced compounds, which are excreted in the urine as conjugation derivatives.
4. Toxic effects: No quantitative data on acute or chronic lethality. Feeding of 3-MAB to rats at a level of 2.67 mM (564 mg) per kilogram of food for 7 months produced occasional mild cirrhosis of the liver (Arcos and Simon, 1962).
5. Carcinogenic effects: Carcinogenicity appears to be very weak also. In the only reported study (Arcos and Simon, 1962) on feeding of 3-MAB (see above), there were two squamous cell papillomas in the stomach in a total of 17 rats. The significance of this incidence was not evaluated.
6. Mutagenic and teratogenic effects: No data.

### Emergency Treatment

1. Skin and eye exposure: For skin exposure, remove contaminated clothing and wash skin with soap and water. For eye exposure, irrigate immediately with copious quantities of running water for at least 15 minutes.
2. Ingestion: Drink plenty of water. Refer for gastric lavage.
3. Inhalation: Remove victim promptly to clean air. Administer rescue breathing if necessary.
4. Refer to physician. Oxygen may be required during transport. Observe for methemoglobinemia.

### References

- Arcos, J.C., and J. Simon. 1962. Effect of 4'-substituents on the carcinogenic activity of 4-aminoazobenzene derivatives. *Arzneim Forsch* 12:270-275.

Hoodless, R.A., J. Thomson, and J.E. Arnold. 1971. Separation and identification of food colours. Part II. Identification of synthetic oil-soluble food colours using thin-layer chromatography. *J Chromatogr* 56:332-337.

Miller, J.A., and C.A. Baumann. 1945. The determination of p-dimethylaminoazobenzene, p-monomethylaminoazobenzene, and p-aminoazobenzene in tissue. *Cancer Res* 5:157-161.

Topham, J.C., and J.W. Westrop. 1964. Thin-layer chromatography of 4-dimethylaminoazobenzene and some of its metabolites. *J Chromatogr* 16:233-234.