



**Substance name: N,N,N',N'-tetramethyl-4,4'-
methylenedianiline (Michler's base)**

**EC number: 202-959-2
CAS number: 101-61-1**

**SUPPORT DOCUMENT FOR IDENTIFICATION OF
N,N,N',N'-tetramethyl-4,4'-methylenedianiline
(Michler's base)**

**AS A SUBSTANCE OF VERY HIGH CONCERN BECAUSE OF ITS
CMR¹ PROPERTIES**

¹ CMR means carcinogenic, mutagenic or toxic for reproduction

Note

During the public consultation, in accordance with Article 59 (4) of the REACH Regulation, on the proposed identification of "N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)" as a Substance of Very High Concern (SVHC) on the basis of its classification as carcinogen category 1B no comments were received objecting the conclusion that the substance meets criteria set out in Article 57(a). Therefore, in accordance with Article 59 (6), "N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)" has been included in the Candidate List by ECHA. The present support document comprises Part I (Justification) of the Annex XV dossier for identification of "N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)" as SVHC on the basis of Article 57(a) of REACH.

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Substance Name(s): N,N,N',N'-tetramethyl-4,4'-methylenedianiline
(Michler's base)

EC Number(s): 202-959-2

CAS Number(s): 101-61-1

- The substance is identified as substance meeting the criteria of Article 57 (a) of Regulation (EC) 1907/2006 (REACH) owing to its classification as carcinogen category 1B² which corresponds to classification as carcinogen category 2³.

Summary of how the substance meets the Carcinogen 1B criteria

N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) is listed as Index number 612-201-00-6 in Regulation (EC) No 1272/2008 and classified in Annex VI, part 3, Table 3.1 (list of harmonised classification and labelling of hazardous substances) as carcinogen, Carc. 1B (H350: "May cause cancer.") The corresponding classification in Annex VI, part 3, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) No 1272/2008 is carcinogen, Carc. Cat. 2, R45 ("May cause cancer.")

Therefore, this classification of Michler's base in Regulation (EC) No 1272/2008 shows that the substance meets the criteria for classification as carcinogen in accordance with Article 57 (a) of REACH.

Registration dossiers submitted for the substance: No (Registration dossiers were submitted for a substance that includes Michler's base as impurity)

² Classification in accordance with Regulation (EC) No 1272/2008 Annex VI, part 3, Table 3.1 List of harmonised classification and labelling of hazardous substances.

³ Classification in accordance with Regulation (EC) No 1272/2008, Annex VI, part 3, Table 3.2 List of harmonised classification and labelling of hazardous substances (from Annex I to Council Directive 67/548/EEC).

JUSTIFICATION

1 IDENTITY OF THE SUBSTANCE AND PHYSICAL AND CHEMICAL PROPERTIES**1.1 Name and other identifiers of the substance**

Table 1: Substance identity

EC number:	202-959-2
EC name:	N,N,N',N'-tetramethyl-4,4'-methylenedianiline
CAS number (in the EC inventory):	101-61-1
CAS number:	Deleted CAS registry number: 30135-64-9
CAS name:	Benzenamine, 4,4'-methylenebis[N,N-dimethyl-
IUPAC name:	4,4'-methylenebis(N,N-dimethylaniline)
Index number in Annex VI of the CLP Regulation	612-201-00-6
Molecular formula:	C ₁₇ H ₂₂ N ₂
Molecular weight range:	254.4 g/mol
Synonyms:	Aniline, 4,4'-methylenebis[N,N-dimethyl-(6CI,7CI,8CI); Aniline, p,p'-methylenedi- (4CI); 4,4'-(Dimethylamino)diphenylmethane; 4,4'-Bis(dimethylamino)diphenylmethane; 4,4'-Bis(dimethylaminophenyl)methane; 4,4'-Methylenebis[N,N-dimethylaniline]; 4,4'-Methylenebis[N,N-dimethylbenzenamine]; 4,4'-Tetramethyldiaminodiphenylmethane; Arnold's base; Bis[4-(N,N-dimethylamino)phenyl]methane; Bis[4-(dimethylamino)phenyl]methane; Bis[p-(N,N-dimethylamino)phenyl]methane; Bis[p-(dimethylamino)phenyl]methane; Michler's Base; Michler's hydride; Michler's methane; N,N,N',N'-Tetramethyl-4,4'-methylenedianiline; N,N,N',N'-Tetramethyl-4,4'-diaminodiphenylmethane; N,N,N',N'-Tetramethyl-p,p'-diaminodiphenylmethane; NSC 36782; NSC 4892; NSC 9029; Reduced Michler's ketone; Tetrabase; Tetramethyldiaminodiphenylmethane; p,p'-Bis(dimethylamino)diphenylmethane; p,p'-Tetramethyldiaminodiphenylmethane

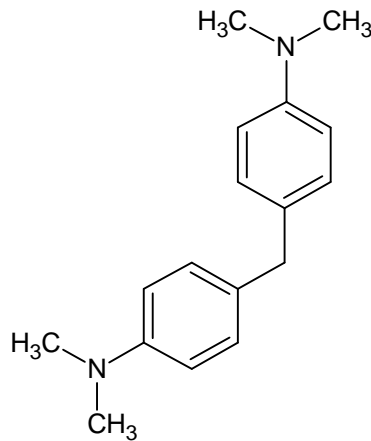
Structural formula:**1.2 Composition of the substance****Name:** N,N,N',N'-tetramethyl-4,4'-methylenedianiline**Description:** ---**Degree of purity:** confidential information

Table 2: Constituents

Constituents	Typical concentration	Concentration range	Remarks
<i>N,N,N',N'</i> -tetramethyl-4,4'-methylenedianiline 202-959-2		Confidential information	Information from C&L notifications

Table 3: Impurities

Impurities	Typical concentration	Concentration range	Remarks
<i>No information available</i>			No impurities indicated in the C&L notifications

Table 4: Additives

Additives	Typical concentration	Concentration range	Remarks
<i>No information available</i>			No additives indicated in the C&L notifications

1.3 Physico-chemical properties

Table 5: Overview of physicochemical properties

Property	Value	Remarks
Physical state at 20°C and 101.3 kPa	solid	
Melting/freezing point	91.5°C	Lide, David. R.; Handbook of Chemistry and Physics 2009, 88 th , P3-50
Boiling point	427.7±30.0°C (1013.25 hPa)	Extracted from CAS; ⁽¹⁾
Water solubility	0.013 g/L (pH7 T= 25°C)	Extracted from CAS; ⁽¹⁾
Partition coefficient n-octanol/water (log value)	3.201 (T=25°C)	Extracted from CAS; ⁽¹⁾
Density	1.039 g/cm ³	Extracted from CAS; ⁽¹⁾

⁽¹⁾ calculated using Advanced Chemistry Development (ACD/Labs) software v11.02
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2 HARMONISED CLASSIFICATION AND LABELLING

N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) is listed as index number 616-011-00-4 in Annex VI, part 3 of Regulation (EC) No 1272/2008 as follows:

Table 6: Classification according to part 3 of Annex VI, Table 3.1 (list of harmonised classification and labelling of hazardous substances) of Regulation (EC) No 1272/2008

International Chemical Identification	EC No	CAS No	Classification		Labelling			Spec. Conc. Limits, M-factors	Notes
			Hazard Class and Category Code(s)	Hazard statement code(s)	Pictogram, Signal Word Code(s)	Hazard statement code(s)	Suppl. Hazard statement code(s)		
N,N,N',N'-tetramethyl-4,4'-methylenedianiline	202-959-2	101-61-1	Carc. 1B Aquatic Acute 1 Aquatic Chronic 1	H350 H400 H410	GHS08 GHS09 Dgr	H350 H410	-	-	-

Table 7: Classification according to part 3 of Annex VI, Table 3.2 (list of harmonized classification and labelling of hazardous substances from Annex I of Council Directive 67/548/EEC) of Regulation (EC) No 1272/2008

International Chemical Identification	EC No	CAS No	Classification	Labelling	Concentration Limits	Notes
N,N,N',N'-tetramethyl-4,4'-methylenedianiline	202-959-2	101-61-1	Carc. Cat. 2; R45 N; R50-53	T; N R: 45-50/53 S: 53-45-60-61	-	-

3 ENVIRONMENTAL FATE PROPERTIES

Not relevant for the identification of the substance as SVHC in accordance with Article 57(a).

4 HUMAN HEALTH HAZARD ASSESSMENT

See section 2 on harmonised classification and labelling.

5 ENVIRONMENTAL HAZARD ASSESSMENT

Not relevant for the identification of the substance as SVHC in accordance with Article 57(a).

6 CONCLUSIONS ON THE SVHC PROPERTIES

6.1 CMR Assessment

N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base) is listed as Index number 612-201-00-6 in Regulation (EC) No 1272/2008 and classified in Annex VI, part 3, Table 3.1 (list of harmonised classification and labelling of hazardous substances) as carcinogen, Carc. 1B (H350: "May cause cancer.") The corresponding classification in Annex VI, part 3, Table 3.2 (the list of harmonised classification and labelling of hazardous substances from Annex I to Directive 67/548/EEC) of Regulation (EC) No 1272/2008 is carcinogen, Carc. Cat. 2, R45 ("May cause cancer.")

Therefore, this classification of Michler's base in Regulation (EC) No 1272/2008 shows that the substance meets the criteria for classification as carcinogen in accordance with Article 57 (a) of REACH.