



Substance name: 4,4'-Diaminodiphenylmethane (MDA)
EC number: 202-974-4
CAS number: 101-77-9

**MEMBER STATE COMMITTEE
SUPPORT DOCUMENT FOR IDENTIFICATION OF
4,4'-DIAMINODIPHENYLMETHANE (MDA) AS A SUBSTANCE
OF VERY HIGH CONCERN**

Adopted on 1 October 2008

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EC Number: 202-974-4

CAS number: 101-77-9

The substance is identified as a CMR according to Article 57(a) of Regulation (EC) 1907/2006 (REACH).

Summary of the evaluation:

According to Annex I to Directive 67/548/EEC, 4,4'-Diaminodiphenylmethane (MDA) is classified as carcinogenic Carc.Cat.2; R45 (May cause cancer).

JUSTIFICATION

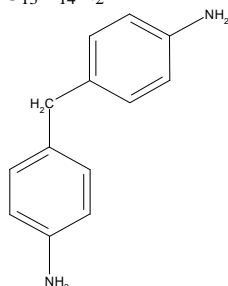
1 IDENTITY OF THE SUBSTANCE AND PHYSICAL AND CHEMICAL PROPERTIES

1.1 Name and other identifiers of the substance

Chemical Name: 4,4'-Diaminodiphenylmethane
 EC Number: 202-974-4
 CAS Number: 101-77-9
 IUPAC Name: Bis (4-aminophenyl)methane

1.2 Composition of the substance

Name: Bis (4-aminophenyl)methane
 EC Number: 202-974-4
 CAS Number: 101-77-9
 IUPAC Name: Bis (4-aminophenyl)methane
 Molecular Formula: $C_{13}H_{14}N_2$
 Structural Formula:



Molecular Weight: 198.3 g/mol
 Synonyms: 4,4'-Methylenedianiline, 4,4'-Diaminodiphenylmethane, 4,4'-Diphenylmethane diamine, 4,4'-Methylenedibenzolamine, 4,4'-Methylenebisbenzeneamine, 4-(4-Aminobenzyl)aniline, MDA

Technical-grade MDA is used as an intermediate in the form of an isomer mixture with a varying content of tri- and polynuclear amines (so-called „polymers“). A typical standard product with a purity between 59 and 61 % (w/w) is liquid at room temperature and comprises the following:

Impurity	Content []	CAS no.	EC no.	Molecular formula
MDA polymers	ca. 36 % w/w			
2,4'-MDA	ca. 3.5 % w/w	1208-52-2	214-900-8	C ₁₃ H ₁₄ N ₂
2,2'-MDA	< 0.1 % w/w	6582-52-1	229-512-4	C ₁₃ H ₁₄ N ₂
water	< 300 ppm	7732-18-5	231-791-2	H ₂ O
aniline	< 100 ppm	62-53-3	200-539-3	C ₆ H ₇ N

Pure 4,4'-MDA (purity ≥ 98 % w/w) is also used as an intermediate and has the following composition:

Impurity	Content []	CAS no.	EC no.	Molecular formula
2,4'-MDA	(2.2- + 2.4) MDA max. 2 % w/w	1208-52-2	214-900-8	C ₁₃ H ₁₄ N ₂
2,2'-MDA	(2.2- + 2.4) MDA max. 2 % w/w	6582-52-1	229-512-4	C ₁₃ H ₁₄ N ₂
4-amino-4'-methylaminodiphenyl methane	traces			
aniline	traces	62-53-3	200-539-3	C ₆ H ₇ N

1.3 Physico-chemical properties

Table 1: Summary of physico- chemical properties

REACH ref. Annex	Property	Value
VII, 7.1	Physical state at 20 C and 1013 hPa	powder
VII, 7.2	Melting / freezing point	89 °C
VII, 7.3	Boiling point	398-399 °C at 1013 hPa
VII, 7.5	Vapour pressure	$2.87 * 10^{-8}$ hPa at 20 °C
VII, 7.7	Water solubility	1.25 g/l at 20 °C
VII, 7.8	Partition coefficient n-octanol/water (log value)	1.59
IX, 7.16	Dissociation constant	-

2 CLASSIFICATION AND LABELLING

2.1 Classification in Annex I of Directive 67/548/EEC

4,4'-Diaminodiphenylmethane (MDA) was inserted in Annex I to Directive 67/54/EEC with the 19th ATP and revised by the 29th ATP and is classified as:

Carc. Cat.2; R45

Muta. Cat.3; R68

T; R39/23/24/25

Xn; R48/20/21/22

R43

N; R51-53

It has been included in Annex I under Index Number: 612-051-00-1.

2.2 Self classification(s)

Not relevant.

3 HUMAN HEALTH HAZARD ASSESSMENT

MDA is listed in Annex I of Directive 67/548/EEC (see Section 2.1)

REFERENCES

Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances. *OJ 196, 16.8.1967, p.1-98*;

EU RAR, 2001: European Union Risk Assessment report, 4,4' -Methylenedianiline, Volume 9. European Commission (EC), Publication Nr. EUR 19727

<http://ecb.jrc.ec.europa.eu/existing-chemicals/>