We, BAYER AKTIENGESELLSCHAFT
of D-5090 Leverkusen, Bayerwerk, Germany

hereby apply for the grant of a Standard Patent for an invention
entitled NOVEL COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND
THEIR USE—"Sulphonylamino guanidinoazines,
which is described in the accompanying complete specification.

For a Convention application - details of basic application—

<table>
<thead>
<tr>
<th>Number</th>
<th>Country</th>
<th>Date of Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>P 37 26 269.6</td>
<td>Germany</td>
<td>7th August, 1987</td>
</tr>
</tbody>
</table>

Our address for service is ARTHUR S. CAVE & CO., Patent and Trade
Mark Attorneys, Level 10, 10 Barrack Street, Sydney, New South
Wales, Australia 2000.

Dated this 29th day of July, 1988.

BAYER AKTIENGESELLSCHAFT
By Its Patent Attorneys,
ARTHUR S. CAVE & CO.

To: Commissioner of Patents

ARTHUR S. CAVE & CO.
PATENT AND TRADE MARK ATTORNEYS
SYDNEY

ASC 1

ARTHUR S. CAVE & CO.
PATENT AND TRADE MARK ATTORNEYS
SYDNEY

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PATENT DECLARATION FORM (CONVENTION)
COMMONWEALTH OF AUSTRALIA

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION
FOR A PATENT

In support of the Convention application made for a patent for an invention entitled

(a) ... Sulphonylaminoquandidinoazines

I/We (b) Joachim Gremm and Günter Schumacher

Both are secretaries of (c) BAYER AKTIENGESELLSCHAFT, D 5090 Leverkusen, Germany

I/We do solemnly and sincerely declare as follows:—

1. I am/We are the applicant(s) for the patent

(OR, IN THE CASE OF AN APPLICATION BY A BODY CORPORATE)

1. I am/We are authorised by BAYER AKTIENGESELLSCHAFT

the applicant for the patent to make this declaration on its behalf.

2. The basic application(s) as defined by Section 141 of the Act was/were made in the following country or countries on the following date(s) namely:

(d) Fed. Rep. of Germany on (e) August 7, 1987

by (f) Bayer Aktiengesellschaft

(e) Insert date of basic application(s).

(f) Insert full name(s) of actual inventor(s).

3. I am/We are the actual inventor(s) of the invention referred to in the basic application.

(OR, WHERE A PERSON OTHER THAN THE INVENTOR IS THE APPLICANT)

3. (g) 1) Klaus-Helmut Müller 2) Christ Fest 3) Rolf Kirsten 4) Theodor Pfister

of (h) 1) Bockhakstrasse 55, D 4000 Dusseldorf 13, Germany
2) Im Johannisthal 20, D 5600 Wuppertal 1, Germany
3) Carl-Langhans-Strasse 27, D 4019 Momheim, Germany
4) Lichtenberger Strasse 30, D 4019 Momheim, Germany

is/are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are entitled to make the application are as follows:

(i) The company that is the assignee of the said invention from the said inventors

4. The basic application(s) referred to in paragraph 2 of this Declaration was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

Declared at Leverkusen this 24th day of June 1988

To:
The Commissioner of Patents

ARTHUR S. CAVE & CO.
PATENT AND TRADE MARK ATTORNEYS
SYDNEY

A5C-4
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PATENT DECLARATION FORM (CONVENTION)
COMMONWEALTH OF AUSTRALIA

Patents Act 1952

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION
FOR A PATENT

To be signed by the applicant(s) or in the case of a body corporate to be signed by a person authorised by the body corporate.

In support of the Convention application made for a patent for an invention entitled

(a) Sulphonylaminoquaternaryazines

(b) Günter Schumacher and Joachim Gremm, both are secretaries

(c) BAYER AKTIENGESELLSCHAFT; D 5090 Leverkusen, Germany

I/We (a) do solemnly and sincerely declare as follows:

1. I/We am/are the applicant(s) for the patent

2. The basic application(s) as defined by Section 141 of the Act was/were made in the following country or countries on the following date(s) namely:

   (d) in Fed. Rep. of Germany on (e) August 7, 1987

   (f) by Bayer Aktiengesellschaft

   (g) in Germany on (h).......

   (i) on (j)...

3. I/We am/are the actual inventor(s) of the invention referred to in the basic application.

   (k) Hans-Jochem Riebel

   (l) Hans-Joachim Santel

   (m) Robert R. Schmidt

   (n) Harry Strang

   (o) 5) In der Beek 92, D 5060 Wuppertal 1, Germany

   (p) Gruenstrasse 9a, D 5090 Leverkusen 1, Germany

   (q) Im Waldwinkel 100, D 5060 Bergisch Gladbach 2, Germany

   (r) Unterdorfstrasse 6A, D 4000 Dusseldorf 31, Germany

   (s) are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are entitled to make the application are as follows:

   The company is the Assignee of the said invention...

4. The basic application(s) referred to in paragraph 2 of this Declaration was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

Declared at Leverkusen this 24th day of June 1988

To: Le A 25 398-AU

The Commissioner of Patents

ARTHUR S. CAVE & CO.
PATENT AND TRADE MARK ATTORNEYS
SYDNEY

Signature of Declarant(s)

Günter Schumacher
Joachim Gremm
Claim 2.

Sulphonylamino guanidino azines of the general formula (I) according to Claim 1, characterized in that therein

\[ \text{R}^1 \text{ stands for the radical } \]

wherein

\[ \text{R}^9 \text{ stands for fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy, } \]

\[ \text{C}_1 \text{-} \text{C}_3 \text{-alkylthio, } \text{C}_1 \text{-} \text{C}_3 \text{-alkylsulphanyl, } \]

\[ \text{C}_1 \text{-} \text{C}_3 \text{-alkylsulphonyl, dimethylaminosulphonyl, } \]

\[ \text{diethylaminosulphonyl, N-methoxy-N-methylamino- } \]

\[ \text{sulphonyl, phenyl, phenoxy or } \text{C}_1 \text{-} \text{C}_3 \text{-alcoxy-carbonyl and } \]

\[ \text{R}^{10} \text{ stands for hydrogen;} \]
in addition

\[ R^1 \text{ stands for the radical } \]

\[
\begin{array}{c}
\text{CH} \\
\text{R}^1_5 \\
\text{R}^1_6
\end{array}
\]

\[
\begin{array}{c}
\text{R}^1_7
\end{array}
\]

wherein

\[ R^{15} \text{ stands for hydrogen,} \]
\[ R^{16} \text{ stands for fluorine, chlorine, bromine, methyl,} \]
\[ \text{methoxy, ethoxy, difluoromethoxy, trifluoromethoxy,} \]
\[ \text{methoxycarbonyl, ethoxycarbonyl, methylsulphonyl} \]
\[ \text{or dimethylaminosulphonyl and} \]
\[ R^{17} \text{ stands for hydrogen;} \]

in addition

\[ R^1 \text{ stands for the radical } \]

\[
\begin{array}{c}
\text{RO-C} \\
\text{O}
\end{array}
\]

wherein

\[ R \text{ stands for C}_1-C_2-\text{alkyl, or} \]
\[ R^1 \text{ stands for the radical } \]

\[
\begin{array}{c}
\text{RO-C} \\
\text{N} \\
\text{CH}_3
\end{array}
\]

wherein

\[ R \text{ stands for C}_1-C_2-\text{alkyl;} \]

in addition

\[ R^2 \text{ stands for C}_1-C_4-\text{alkyl which is optionally} \]
\[ \text{substituted by fluorine or chlorine or for phenyl} \]
\[ \text{which is optionally substituted by fluorine, chlorine,} \]
\[ \text{bromine, C}_1-C_3-\text{alkyl, trifluoromethyl,} \]
\[ \text{chlorodifluoromethyl, methoxy, ethoxy, difluoromethoxy,} \]
\[ \text{trifluoromethoxy, amino, acetamido, methoxycarbonyl} \]
\[ \text{and/or ethoxycarbonyl,} \]
\[ R^3 \text{ stands for hydrogen, fluorine, chlorine, bromine,} \]
\[ \text{methyl, trifluoromethyl, methoxy, ethoxy,} \]
\[ \text{difluoromethoxy, methylthio, ethylthio, amino,} \]
\[ \text{methylamino, ethylamino, dimethylamino or diethylamino,} \]
\[ X \text{ stands for nitrogen, or a } -\text{CR}^4- \text{ grouping,} \]
\[ Y \text{ stands for nitrogen or a } -\text{CR}^4- \text{ grouping,} \]

wherein
R^4 stands for hydrogen, fluoride, chlorine or methyl,
Z stands for a CR^5- grouping,
wherein
R^5 stands for hydrogen, fluoride, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, propoxy, isopropoxy, difluoromethoxy, methylthio, ethylthio, methylamino, ethylamino, dimethylamino or diethylamino, and
M stands for hydrogen or a sodium equivalent, potassium equivalent or calcium equivalent, an ammonium equivalent or a C_1-C_4-alkyl-ammonium equivalent,
where N'-(4,6-dimethyl-pyrimidin-2-yl)-N"-(4-methyl-phenyl sulphonylamino)-N"'(2-chloro-phenylsulphonyl) guanidine
is excluded.
AUSTRALIA
PATENTS ACT 1952

COMPLETE SPECIFICATION (ORIGINAL)

FOR OFFICE USE

Application Number:
Lodged:
Complete Specification Lodged:
Accepted:
Published:
Priority:
Related Art:

TO BE COMPLETED BY APPLICANT

Name of Applicant: BAYER AKTIENGESELLSCHAFT
Address of Applicant: D-5090 Leverkusen, Bayerwerk, Germany
Actual Inventors: 1) Dr. Klaus-Helmut Müller
2) Dr. Christa Fest
3) Dr. Rolf Kirsten
4) Dr. Theodor Pfister
5) Dr. Hans-Jochem Riebei
6) Dr. Hans-Joachim Santel
7) Dr. Robert R. Schmidt
8) Dr. Harry Strang
Address for Service: ARTHUR S. CAVE & CO.
Patent & Trade Mark Attorneys
Level 10
10 Barrack Street
SYDNEY N.S.W. 2000
AUSTRALIA

Complete Specification for the invention entitled NOVEL COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE.
SULPHONYLAMINOQUANIDINOAZINES

The following statement is a full description of this invention including the best method of performing it known to me:-
The invention relates to new sulphonylamino-guanidinoazines, a process for their preparation and their use as herbicides.

It has already been disclosed that certain amino-guanidinoazines, such as, for example, \( N'-(4,6\text{-dimethyl-pyrimidin}-2\text{-yl})-N''-\text{acetamido}\text{-}N'''-(2\text{-chlorophenylsulphonyl})\text{-guanidine} \) exhibit herbicidal properties (compare EP-A 121,082). The herbicidal action of the hitherto known aminoguanidinoazines is not always very satisfactory, however.

New sulphonylamino-guanidinoazines of the general formula (I)

\[
\begin{array}{c}
R_1^1-SO_2-N^1-N^2-N^3-N^4-SO_2-R_2^2
\
\end{array}
\]

in which

- \( R_1^1 \) stands for an optionally substituted radical from the series comprising alkyl, aralkyl, aryl and hetaryl,
- \( R_2^2 \) stands for an optionally substituted radical from the series comprising alkyl, aralkyl, aryl, hetaryl and dialkylamino,
- \( R_3^3 \) stands for hydrogen, halogen, hydroxyl, alkyl, halogenoalkyl, alkoxyalkyl, alkoxy, halogenoalkoxy, alkylthio, halogenoalkylthio, amino, alkylamino or dialkylamino,
- \( X \) stands for nitrogen or a \(-\text{CH-}\) grouping,
- \( Y \) stands for nitrogen or a \(-\text{CR}^4\)-grouping,

wherein

- \( R_4^4 \) stands for hydrogen, halogen, cyano, alkyl, formyl, alkyl-carbonyl or alkoxy-carbonyl,
- \( Z \) stands for nitrogen or a \(-\text{CR}^5\)-grouping,
$R^5$ stands for hydrogen, halogen, hydroxyl, alkyl, alkoxy, halogenoalkoxy, alkylthio, alkylamino or dialkylamino, and M stands for hydrogen, a metal equivalent, an ammonium equivalent, an alkylammonium equivalent, a dialkylammonium equivalent, or a trialkylammonium equivalent, have now been found, where $N'$-(4,6-dimethyl-pyrimidin-2-yl)-$N''$-(4-methyl-phenylsulphonyl amino)-$N''$-(2-chloro-phenyl-sulphonyl)-guanidine - known from EP-A 121,082 - is excluded.

The general formula (I) stands - when M stands for hydrogen - for the individual possible tautomers of the formulae (IA), (IB) and (IC).

$$R^1-\text{SO}_2-N\equiv C\equiv N\equiv N_{-}^{Z=N} Y$$  \hspace{1cm} (IA)

$$R^1-\text{SO}_2-N\equiv C\equiv N\equiv N_{-}^{Z=N} Y$$  \hspace{1cm} (IA)

$$R^1-\text{SO}_2-N\equiv C\equiv N\equiv N_{-}^{Z=N} Y$$  \hspace{1cm} (IC)

15 and also for mixtures of these tautomers.

The new sulphonylamino guanidinoazines of the general formula (I) are obtained when sulphonyl compounds of the general formula (II)

$$R^1-\text{SO}_2-N\equiv C\equiv N\equiv N_{-}^{Z=N} Y$$  \hspace{1cm} (II)
in which

\[ R^1, R^3, X, Y \text{ and } Z \text{ have the abovementioned meanings and} \]
\[ A \text{ stands for one of the leaving groups given below} \]
\[ R^6-SO_2-N-O-R^7 \text{ or } Q-R^8, \]

wherein

\[ R^6 \] has the abovementioned meaning for \( R^1 \), but does not have to be identical with \( R^1 \) in each individual case,
\[ R^7 \] stands for alkyl, alkenyl or aralkyl,
\[ R^8 \] stands for alkyl, aralkyl or aryl and
\[ Q \] stands for oxygen or sulphur,

are reacted with sulphonyl hydrazides of the general formula (III)

\[ R^2 - SO_2 - NH - NH_2 \] (III)

in which

\[ R^2 \] has the abovementioned meaning,

if desired in the presence of a diluent, and the products thus obtained are converted if desired into salts by customary methods.

The new sulphonylamidoguanidinoazines of the general formula (I) are distinguished by strong herbicidal activity.

Surprisingly, the new compounds of the general formula (I) show a considerably better herbicidal action than previously known aminoguanidinoazines with an equivalent type of action.

The invention preferably relates to compounds of the formula (I) in which

\[ R^1 \] stands for the radical

wherein

\[ R^9 \text{ and } R^{10} \] are identical or different and stand for hydrogen, fluorine, chlorine, bromine, iodine, cyano, nitro, \( \kappa_6 \)-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano,

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carboxyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkyl-
aminocarbonyl, di-(C₁-C₄-alkyl)-aminocarbonyl,
hydroxyl, C₁-C₄-alkoxy, formyloxy, C₁-C₄-alkyl-
carbonyloxy, C₁-C₄-alkoxy-carbonyloxy, C₁-C₄-alkyl-
aminocarbonyloxy, C₁-C₄-alkylthio, C₁-C₄-alkyl-
sulphinyl, C₁-C₄-alkylsulphonyl, di-(C₁-C₄-
alkyl)-aminosulphonyl, C₃-C₆-cycloalkyl or
Phenyl, for C₂-C₆-alkenyl [which is optionally substituted
by fluorine, chlorine, bromine, cyano, C₁-C₄-
alcoholcarbonyl, carboxyl or phenyl], for C₂-C₆-
alkinyl [which is optionally substituted by fluorine,
chlorine, bromine, cyano, C₁-C₄-alkoxy-carbonyl,
carboxyl or phenyl], for C₁-C₄-alkoxy [which is
optionally substituted by fluorine, chlorine, bromine,
cyano, carboxyl, C₁-C₄-alkoxy-carbonyl,
C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkyl-
sulphinyl or C₁-C₄-alkylsulphonyl], for C₁-C₄-
alkylthio [which is optionally substituted by fluoro-
ine, chlorine, bromine, cyano, carboxyl, C₁-C₄-
alcoholcarbonyl, C₁-C₄-alkylthio, C₁-C₄-alkyl-
sulphinyl or C₁-C₄-alkylsulphonyl], for C₃-C₆-
alkenylxy [which is optionally substituted by fluoro-
ine, chlorine, bromine, cyano or C₁-C₄-alkoxy-
carbonyl], for C₂-C₆-alkenylthio [which is option-
ally substituted by fluorine, chlorine, bromine,
cyano, nitro, C₁-C₃-alkylthio or C₁-C₄-alkoxy-
carbonyl], C₃-C₆-alkinylxy, C₃-C₆-alkinylthio
or for the radical -S(O)₆-R¹¹,

wherein

p stands for the numbers 1 or 2 and

R¹¹ stands for C₁-C₄-alkyl [which is optionally
substituted by fluorine, chlorine, bromine, cyano
or C₁-C₄-alkoxy-carbonyl], C₃-C₆-alkenyl,
C₃-C₆-alkinyl, C₁-C₄-alkoxy, C₁-C₄-alkoxy-
C₁-C₄-alkylamino, C₁-C₄-alkylamino, di-
(C₁-C₄-alkyl)-amino or for the radical -NHOR¹²,
wherein

$R^{12}$ stands for $C_1$-$C_{12}$-alkyl (which is optionally substituted by fluorine, chlorine, cyano, $C_1$-$C_4$-alkoxy, $C_1$-$C_4$-alkythio, $C_1$-$C_4$-alkyl-sulphinyl, $C_1$-$C_4$-alkylsulphonyl, $C_1$-$C_4$-alkyl-carbonyl, $C_1$-$C_4$-alkoxy-carbonyl, $C_1$-$C_4$-alkyl-amino-carbonyl or di-$(C_1$-$C_4$-alkyl)-amino-carbonyl), for $C_3$-$C_6$-alkenyl (which is optionally substituted by fluorine, chlorine or bromine), $C_3$-$C_6$-alkynyl, $C_3$-$C_6$-cycloalkyl, $C_3$-$C_6$-cycloalkyl-$C_1$-$C_2$-alkyl, phenyl-$C_1$-$C_2$-alkyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, $C_4$-$C_4$-alkyl, $C_1$-$C_4$-alkoxy or $C_1$-$C_4$-alkoxy-carbonyl), for benzohydryl or for phenyl (which is optionally substituted by fluorine, chlorine, nitro, cyano, $C_1$-$C_4$-alkyl, trifluoromethyl, $C_1$-$C_4$-alkoxy, $C_1$-$C_2$-fluoroalkoxy, $C_1$-$C_4$-alkythio, trifluoromethylthio or $C_1$-$C_4$-alkoxy-carbonyl),

$R^9$ and $R^{10}$ furthermore stand for phenyl or phenoxyl for amino, $C_1$-$C_4$-alkylcarbonylamo, $C_1$-$C_4$-alkoxy-carbonylamo, $C_1$-$C_4$-alkylamino-carbonylamino, or for the radical $-CO-R^{13}$,

wherein

$R^{13}$ stands for $C_1$-$C_6$-alkyl, $C_1$-$C_6$-alkoxy, $C_3$-$C_6$-cycloalkoxy, $C_3$-$C_6$-alkenyloxy, $C_1$-$C_4$-alkylthio, $C_1$-$C_4$-alkylamino, $C_1$-$C_4$-alkoxy-$C_1$-$C_4$-alkyl-amino or di-$(C_1$-$C_4$-alkyl)-amino (which are optionally substituted by fluorine and/or chlorine),

$R^9$ and $R^{10}$ furthermore stand for $C_1$-$C_4$-alkyl-sulphphonyloxy, di-$(C_1$-$C_4$-alkyl)-aminosulphonylamino, thiazolylloxy or for the radical $-CH=N-R^{14}$,

wherein

$R^{14}$ stands for $C_1$-$C_6$-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl,
C_1-C_4-alkoxy, C_1-C_4-alkylthio, C_1-C_4-alkylsulphinyl or C_1-C_4-alkylsulphonyl, for benzyl which is optionally substituted by fluorine or chlorine, for C_3-C_6-alkenyl or C_3-C_6-alkinyl which are optionally substituted by fluorine or chlorine, for phenyl which is optionally substituted by fluorine, chlorine, bromine, C_1-C_4-alkyl, C_1-C_4-alkoxy, trifluoromethyl, trifluoromethoxy or trifluoromethylthio, for C_1-C_6-alkoxy, C_3-C_6-alkenoxy, C_3-C_6-alkinoxy or benzyloxy which are optionally substituted by fluorine and/or chlorine, for amino, C_1-C_4-alkylamino, di-(C_1-C_4-alkyl)-amino, phenylamino, C_1-C_4-alkyl-carbonyl-amino, C_1-C_4-alkoxy-carbonylamino, C_1-C_4-alkyl-sulphonylamino or for phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,

wherein in addition, 

R^1 stands for the radical 

[Diagram]

wherein 

R^15 stands for hydrogen or C_1-C_4-alkyl, 
R^16 and R^17 are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1-C_4-alkyl (which is optionally substituted by fluorine and/or chlorine), C_1-C_4-alkoxy (which is optionally substituted by fluorine and/or chlorine), carboxyl, C_1-C_4-alkoxy-carbonyl, C_1-C_4-alkylsulphonyl or di-(C_1-C_4-alkyl)-aminosulphonyl;

wherein in addition 

R^1 stands for the radical 

[Diagram]

wherein 

R^18 and R^19 are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C_1-C_4-alkyl (which is optionally substituted by fluorine and/or chlorine) or C_1-C_4-alkoxy.

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[which is optionally substituted by fluorine and/or chlorine];

wherein in addition

\[ R^1 \] stands for the radical

wherein

\[ R^{20} \] and \[ R^{21} \] are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, \( C_1-C_4 \)-alkyl [which is optionally substituted by fluorine and/or chlorine], \( C_1-C_4 \)-alkoxy [which is optionally substituted by fluorine and/or chlorine], for \( C_1-C_4 \)-alkylthio, \( C_1-C_4 \)-alkylsulphinyl or \( C_1-C_4 \)-alkylsulphonyl [which are optionally substituted by fluorine and/or chlorine], and also for di-(\( C_1-C_4 \)-alkyl)-aminosulphonyl or

\[ C_1-C_4 \]-alkoxy-carbonyl;

wherein in addition

\[ R^1 \] stands for the radical

wherein

\[ R^{22} \] and \[ R^{23} \] are identical or different and stand for hydrogen, fluorine, chlorine, bromine, \( C_1-C_4 \)-alkyl [which is optionally substituted by fluorine and/or bromine], \( C_1-C_4 \)-alkoxy [which is optionally substituted by fluorine and/or chlorine], for \( C_1-C_4 \)-alkylthio, \( C_1-C_4 \)-alkylsulphinyl or \( C_1-C_4 \)-alkylsulphonyl [which are optionally substituted by fluorine and/or chlorine], or for di-(\( C_1-C_4 \)-alkyl)-aminosulphonyl;

wherein in addition

\[ R^1 \] stands for the radical

wherein

\[ R^{24} \] and \[ R^{25} \] are identical or different and stand for hydrogen, fluorine, chlorine, bromine, cyano, nitro, \( C_1-C_4 \)-alkyl [which is optionally substituted by fluorine and/or chlorine], \( C_1-C_4 \)-alkoxy [which is optionally substituted by fluorine and/or chlorine], \( C_1-C_4 \)-alkylthio, \( C_1-C_4 \)-alkylsulphinyl
or C\textsubscript{1}-C\textsubscript{4}-alkylsulphonyl [which is optionally substituted by fluorine and/or chlorine], di-(C\textsubscript{1}-C\textsubscript{4}-alkyl)-amino-sulphonyl or C\textsubscript{1}-C\textsubscript{4}-alkoxy-carbonyl, and

A stands for oxygen, sulphur or the grouping N-C\textsuperscript{1},

wherein

Z\textsuperscript{1} stands for hydrogen, C\textsubscript{1}-C\textsubscript{4}-alkyl [which is optionally substituted by fluorine, chlorine, bromine or cyano], C\textsubscript{3}-C\textsubscript{6}-cycloalkyl, benzyl, phenyl

[which is optionally substituted by fluorine, chlorine, bromine or nitro], C\textsubscript{1}-C\textsubscript{4}-alkylcarbonyl, C\textsubscript{1}-C\textsubscript{4}-alkoxy-carbonyl or di-(C\textsubscript{1}-C\textsubscript{4}-alkyl)-aminocarbonyl;

wherein in addition

R\textsuperscript{1} stands for the radical \[\text{\begin{tikzpicture}
\node (n1) at (0,0) {N};
\node (n2) at (1,0) {Y\textsuperscript{1}};
\node (n3) at (2,0) {R\textsuperscript{27}};
\node (n4) at (1,1) {R\textsuperscript{26}};
\end{tikzpicture}}\]

wherein

R\textsuperscript{26} stands for hydrogen, C\textsubscript{1}-C\textsubscript{5}-alkyl or halogen,

R\textsuperscript{27} stands for hydrogen or C\textsubscript{1}-C\textsubscript{5}-alkyl and

Y\textsuperscript{1} stands for sulphur or the grouping N-R\textsuperscript{28},

wherein

R\textsuperscript{28} stands for hydrogen or C\textsubscript{1}-C\textsubscript{5}-alkyl,

wherein in addition

R\textsuperscript{1} stands for the radical \[\text{\begin{tikzpicture}
\node (n1) at (0,0) {N};
\node (n2) at (1,0) {R\textsuperscript{30}};
\node (n3) at (2,0) {R\textsuperscript{31}};
\node (n4) at (1,1) {R\textsuperscript{29}};
\end{tikzpicture}}\]

wherein

R\textsuperscript{29} stands for hydrogen, C\textsubscript{1}-C\textsubscript{4}-alkyl or phenyl,

R\textsuperscript{30} stands for hydrogen, halogen, cyano, nitro, C\textsubscript{1}-C\textsubscript{4}-alkyl [which is optionally substituted by fluorine and/or chlorine], C\textsubscript{1}-C\textsubscript{4}-alkoxy [which is optionally substituted by fluorine and/or chlorine] or C\textsubscript{1}-C\textsubscript{4}-alkoxy-carbonyl and

R\textsuperscript{31} stands for hydrogen, halogen or C\textsubscript{1}-C\textsubscript{4}-alkyl,

wherein in addition,

R\textsuperscript{1} stands for the radical

\[\text{\begin{tikzpicture}
\node (n1) at (0,0) {N};
\node (n2) at (1,0) {R\textsuperscript{32}};
\node (n3) at (2,0) {R\textsuperscript{33}};
\end{tikzpicture}}\]

wherein

Le A 25 398
$R^{32}$ stands for $\text{C}_1-\text{C}_3$-alkyl and
$R^{33}$ stands for $\text{C}_1-\text{C}_4$-alkyl,
wherein in addition
$R^1$ stands for the radical

\[
\begin{array}{c}
\text{C} \equiv \text{O} \equiv \text{C} \equiv \text{O}
\end{array}
\]

in which in addition
$R^2$ has the meaning given above as preferred for $R^1$, but does not have to be identical with $R^1$ in each individual case, and in addition can stand for di-
$\text{(C}_1-\text{C}_3$-alkyl)-amino or for $\text{C}_1-\text{C}_8$-alkyl which
is optionally substituted by halogen,

$R^3$ stands for hydrogen, fluorine, chlorine, bromine, $\text{C}_1-\text{C}_4$-alkyl, $\text{C}_1-\text{C}_4$-halogenoalkyl, $\text{C}_1-\text{C}_2$-alkoxy-$\text{C}_1-\text{C}_2$-alkyl, $\text{C}_1-\text{C}_4$-alkoxy, $\text{C}_1-\text{C}_4$-
halogenoalkoxy, $\text{C}_1-\text{C}_4$-alkylthio, $\text{C}_1-\text{C}_4$-halogeno-
alkylthio, amino, $\text{C}_1-\text{C}_4$-alkylamino, dimethyl-
amino or diethylamino,

$X$ stands for nitrogen or a $-\text{CH}$- grouping,
$Y$ stands for nitrogen or a $-\text{CR}^4$- grouping,

\[
\begin{array}{c}
\text{R}^4
\end{array}
\]

wherein
$R^4$ stands for hydrogen, fluorine, chlorine, bromine, cyano, methyl, formyl, acetyl, methoxycarbonyl or ethoxycarbonyl and

$Z$ stands for nitrogen or a $-\text{CR}^5$- grouping,

\[
\begin{array}{c}
\text{R}^5
\end{array}
\]

wherein
$R^5$ stands for hydrogen, fluorine, chlorine, bromine, $\text{C}_1-\text{C}_4$-alkyl, $\text{C}_1-\text{C}_4$-alkoxy, $\text{C}_1-\text{C}_4$-halogeno-
alkoxy, $\text{C}_1-\text{C}_4$-alkylthio, $\text{C}_1-\text{C}_4$-alkylamino, dimethylamino or diethylamino, and

$M$ stands for hydrogen or a sodium equivalent, a potassium equivalent or a calcium equivalent, an ammonium equivalent, a $\text{C}_1-\text{C}_6$-alkylammonium equivalent, a di-($\text{C}_1-\text{C}_4$-alkyl)-ammonium or a

$\text{tri-}($\text{C}_1-\text{C}_4$-alkyl$)$-ammonium equivalent,

where $N^1$-($4,6$-dimethyl-pyrimidin-$2$-yl)-$N^2$-($4$-methyl-$

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phenylsulphonylamino)-N''-(2-chloro-phenylsulphonyl)-guanidine is excluded.

The invention relates in particular to compounds of the formula (I) in which

$$R^1$$ stands for the radical

wherein

$$R^9$$ stands for fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy, C₁-C₃-alkylthio, C₁-C₃-alkylsulphinyl, C₁-C₃-alkylsulphonyl, dimethylaminosulphinyl, diethylaminosulphinyl, N-methoxy-N-methylaminosulphinyl, phenyl, phenoxy or C₁-C₃-alkoxycarbonyl and

$$R^{10}$$ stands for hydrogen;

wherein in addition $$R^1$$ stands for the radical

20 wherein

$$R^{15}$$ stands for hydrogen, $$R^{16}$$ stands for fluorine, chlorine, bromine, methyl, methoxy, ethoxy, difluoromethoxy, trifluoromethoxy, methoxycarbonyl, ethoxycarbonyl, methylsulphonyl or dimethylaminosulphonyl and

$$R^{17}$$ stands for hydrogen;

wherein in addition $$R^1$$ stands for the radical

30 wherein

$$R$$ stands for C₁-C₂-alkyl, or

$$R^1$$ stands for the radical

35 wherein

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R stands for C₁-C₂-alkyl;
in which in addition
R² stands for C₁-C⁴-alkyl which is optionally
substituted by fluorine or chlorine or for phenyl
which is optionally substituted by fluorine, chlorine,
bromine, C₁-C³-alkyl, trifluoromethyl,
chlorodifluoromethyl, methoxy, ethoxy, difluoro-
methoxy, trifluoromethoxy, amino, acetamido, meth-
oxycarbonyl and/or ethoxycarbonyl,
R³ stands for hydrogen, fluorine, chlorine, bro-
mine, methyl, trifluoromethyl, methoxy, ethoxy,
difluoromethoxy, methylthio, ethylthio, amino,
methylamino, ethylamino, dimethylamino or diethyl-
amino,
X stands for nitrogen or a -CH- grouping,
Y stands for nitrogen or a -CR⁴- grouping,
wherein
R⁴ stands for hydrogen, fluorine, chlorine or
methyl,
Z stands for nitrogen or a -CR⁵- grouping,
wherein
R⁵ stands for hydrogen, fluorine, chlorine, bromine, mé-
ethyl, ethyl, methoxy, ethoxy, propoxy, isoproxy, dif-
fluoromethoxy, methylthio, ethylthio, methylamino, ethyl-
amino, dimethylamino or diethylamino, and
M stands for hydrogen or a sodium equivalent, potas-
sium equivalent or calcium equivalent, an ammonium
equivalent or a C₁-C⁴-alkyl-ammonium equivalent,
where N¹-(4,6-dimethyl-pyrimidin-2-yl)-N''-(4-methyl-
phenylsulphonylamino)-N''-(2-chloro-phenylsulphonyl)-
guanidine is excluded.
If, for example, N¹-(4,6-dimethoxy-s-triazin-2-yl)-
N''-methoxy-N'',N''-bis-(2-bromo-phenylsulphonyl)-guanidine
and trifluoromethanesulphonyl hydrazide are used as starting
materials, then the course of the reaction in the process
according to the invention can be represented by the
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following equation:

\[
\begin{align*}
\text{Br} & \quad \text{SO}_2 - \text{N} & \quad \text{C} & \quad \text{NH} & \quad \text{OCH}_3 \\
\text{Br} & \quad \text{SO}_2 - \text{N} & \quad \text{C} & \quad \text{NH} & \quad \text{OCH}_3 \\
\text{Br} & \quad \text{SO}_2 - \text{NH} - \text{OCH}_3 & \quad + & \quad \text{H}_2\text{N} - \text{NH} - \text{SO}_2 - \text{CF}_3
\end{align*}
\]

Formula (II) provides a general definition of the sulphonyl compounds to be used as starting materials in the process according to the invention. In the formula (II), \( R^1, R^3, X, Y \) and \( Z \) preferably or particularly have those meanings which have already been given above as preferred or particularly preferred for \( R^1, R^3, X, Y \) and \( Z \) in the scope of the description of the compounds of the formula (I) according to the invention and

- A preferably stands for one of the leaving groups given below,
  \( R^6 - \text{SO}_2 - \text{N} - \text{OR}^7 \) or \( -\text{Q} - R^8 \),

wherein

- \( R^6 \) has the meaning given above as preferred for \( R^1 \),
- but need not be identical with \( R^1 \) in each individual case,
- \( R^7 \) stands for \( \text{C}_1 - \text{C}_4 \)-alkyl, \( \text{C}_3 - \text{C}_4 \)-alkenyl or benzyl,
- \( R^8 \) stands for \( \text{C}_1 - \text{C}_4 \)-alkyl, benzyl or phenyl

and

- \( Q \) stands for oxygen or sulphur.
In particular, A stands for the grouping
\[ R^6-SO_2-N-OR^7, \]
wherein
\[ R^6 \] has the meaning given above as particularly
preferred for \( R^1 \), but does not have to be identical
with \( R^1 \) in each individual case and
\( R^7 \) stands for methyl.
Examples of the starting materials of the formula
(II) are shown in Table 1 below.

Table 1: Examples of starting materials of the formula
(II)

\[
\begin{align*}
R^1-SO_2-N & \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \frac{1}{13} -
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*Table 1 - continuation*
Table 1 - continuation

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<td>( Y )</td>
<td>( Z )</td>
</tr>
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<td>----------------------</td>
<td>------------------</td>
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<td>--------</td>
</tr>
<tr>
<td>(-SC_6H_5)</td>
<td><img src="image1" alt="Diagram" /></td>
<td>OCH(_3)</td>
<td>N</td>
<td>CH</td>
<td>C-OCH(_3)</td>
</tr>
<tr>
<td>( \text{SO}_2-\text{N-OCH}_3 )</td>
<td><img src="image2" alt="Diagram" /></td>
<td>CH(_3)</td>
<td>N</td>
<td>N</td>
<td>C-OCH(_3)</td>
</tr>
<tr>
<td>( \text{COOCH}_3 )</td>
<td><img src="image3" alt="Diagram" /></td>
<td>OCH(_3)</td>
<td>N</td>
<td>CH</td>
<td>C-OCH(_3)</td>
</tr>
<tr>
<td>( \text{SO}_2-\text{N-OCH}_3 )</td>
<td><img src="image4" alt="Diagram" /></td>
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<td>N</td>
<td>CH</td>
<td>C-OCH(_3)</td>
</tr>
<tr>
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<td><img src="image5" alt="Diagram" /></td>
<td>OCH(_3)</td>
<td>N</td>
<td>CH</td>
<td>C-OCH(_3)</td>
</tr>
</tbody>
</table>

Formula (III) provides a general definition of the sulphonyl hydrazides to be used in addition as starting materials in the process according to the invention. In formula (III), \( R^2 \) preferably or particularly has that meaning which has already been given above as preferred or as particularly preferred for \( R^2 \) in the scope of the description of the compounds of the formula (I) according to the invention.

Examples of the compounds of the formula (III) which may be mentioned are:

- methane-, ethane-, propane- and butane-sulphonyl hydrazide,
- trifluoromethane-, perfluorobutane-, chloromethane- and 2-chloro-ethane-sulphonyl hydrazide,
- benzenesulphonyl hydrazide, 2-fluoro-, 4-fluoro-, 2-chloro-, 4-chloro-, 2-bromo-, 4-bromo-, 2-methyl-, 4-methyl-, 2-trifluoromethyl-, 3-chlorodifluoromethyl-, 2-methoxy-, 4-methoxy-, 2-ethoxy-, 4-ethoxy-, 2-difluoromethoxy-, 2-trifluoromethoxy-, 4-trifluoromethoxy-, 2-trifluoromethoxy-, 2-methoxy carbonyl-, 4-methoxy carbonyl-, 2-ethoxy carbonyl-, 4-ethoxy carbonyl-
- benzenesulphonyl hydrazide and dimethyl sulphamoyl hydrazine.

The starting materials of the formula (III) are known and/or can be prepared by processes which are known per se (compare Org. Synth. 40 (1960), 93 – 95).

The process according to the invention for the preparation of the new sulphonylaminoguanidinoazines of the formula (I) is preferably carried out using diluents. Possible diluents here are preferably water and/or polar organic solvents, such as methanol, ethanol, isopropanol, butanol, isobutanol, sec-butanol, tert-butanol, glycol dimethyl ether, diglycol dimethyl ether, tetrahydrofuran, dioxane, methyl acetate, ethyl acetate, acetonitrile, propionitrile, dimethyl formamide, dimethyl acetamide, N-methylpyrrolidone.
dimethyl sulfoxide and tetramethylenesulphone.

The reaction temperatures can be varied within a relatively wide range when carrying out the process according to the invention. In general, the reaction is carried out at temperatures between 0°C and 150°C, preferably at temperatures between 10°C and 100°C.

For carrying out the process according to the invention, between 1 and 5 moles, preferably between 1 and 3 moles, of sulphonyl hydrazide of the formula (III) are generally employed per mole of sulphonyl compound of the formula (II).

In general, the reaction components are combined at room temperature or with ice cooling and the reaction mixture is stirred until completion of the reaction, if necessary at elevated temperature. The products of the formula (I) are generally precipitated as crystals after cooling and can be isolated by filtering off with suction.

For conversion into salts, the compounds of the formula (I) in which M stands for hydrogen are stirred with suitable metal compounds, such as, for example, sodium hydroxide or potassium hydroxide, sodium methylate or potassium methylate, or sodium ethylate or potassium ethylate or with suitable amines, such as, for example, isopropylamine, in suitable diluents, such as, for example, water, methanol or ethanol. The salts can then be isolated - if appropriate after concentration, as crystalline products.

The active compounds according to the invention can be used as defoliants, desiccants, agents for destroying broad-leaved plants and, especially, as weed-killers. By weeds, in the broadest sense, there are to be understood all plants which grow in locations where they are undesirable. Whether the substances according to the invention act as total or selective herbicides depends essentially on the amount used.

The active compounds according to the invention

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- 25 -
Q stands for oxygen or sulphur.

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- 12 -

can be used, for example, in connection with the following plants:

**Dicotyledon weeds of the genera:** Sinapis, Lepidium, Galium, Stellaria, Matricaria, Anthemis, Galinsoga, Chenopodium, Urtica, Senecio, Amaranthus, Portulaca, Xanthium, Convolvulus, Ipomoea, Polygonum, Sesbania, Ambrosia, Cirsium, Carduus, Sonchus, Solanum, Rorippa, Rotala, Lindernia, Lamium, Veronica, Abutilon, Emex, Datura, Viola, Galeopsis, Papaver and Centaurea.

**Dicotyledon cultures of the genera:** Gossypium, Glycine, Beta, Daucus, Phaseolus, Pisum, Solanum, Linum, Ipomoea, Vicia, Nicotiana, Lycopersicon, Arachis, Brassica, Lactuca, Cucumis and Cucurbita.

**Monocotyledon weeds of the genera:** Echinochloa, Setaria, Panicum, Digitaria, Phleum, Poa, Festuca, Eleusine, Brassicaria, Lolium, Bromus, Avena, Cyperus, Sorghum, Agropyron, Cynodon, Monochoria, Fimbristylis, Sagittaria, Eleocharis, Scirpus, Paspalum, Ischaemum, Sphenoclea, Dactyloctenium, Agrostis, Alopecurus and Apera.

**Monocotyledon cultures of the genera:** Oryza, Zea, Triticum, Hordeum, Avena, Secale, Sorghum, Panicum, Saccharum, Ananas, Asparagus and Allium.

However, the use of the active compounds according to the invention is in no way restricted to these genera, but also extends in the same manner to other plants.

The compounds are suitable, depending on the concentration, for the total combating of weeds, for example on industrial terrain and rail tracks, and on paths and squares with or without tree plantings. Equally, the compounds can be employed for combating weeds in perennial cultures, for example afforestations, decorative tree plantings, orchards, vineyards, citrus groves, nut orchards, banana plantations, coffee plantations, tea plantations, rubber plantations, oil palm plantations, cocoa plantations, soft fruit plantations and hopfields.
and for the selective combating of weeds in annual cultures.

The new active compounds are suitable for selectively combating monocotyledon and dicotyledon weeds using the pre-emergence and the post-emergence methods, in particular in monocotyledon crops, particularly also paddy rice.

On application of the new active compounds, defoliating action and activity against rice diseases, such as Pyricularia oryzae, was also observed.

The active compounds can be converted into the customary formulations, such as solutions, emulsions, wettable powders, suspensions, powders, dusting agents, pastes, soluble powders, granules, suspension-emulsion concentrates, natural and synthetic materials impregnated with active compound, and very fine capsules in polymeric substances.

These formulations are produced in known manner, for example by mixing the active compounds with extenders, that is liquid solvents and/or solid carriers, optionally with the use of surface-active agents, that is emulsifying agents and/or dispersing agents and/or foam-forming agents.

In the case of the use of water as an extender, organic solvents can, for example, also be used as auxiliary solvents. As liquid solvents, there are suitable in the main: aromatics, such as xylene, toluene or alkyl naphthalenes, chlorinated aromatics and chlorinated aliphatic hydrocarbons, such as chlorobenzenes, chloroethylene, methylene chloride, aliphatic hydrocarbons, such as cyclohexane or paraffins, for example petroleum fractions, mineral and vegetable oils, alcohols, such as butanol or glycol as well as their ethers and esters, ketones, such as acetone, methyl ethyl ketone, methyl isobutyl ketone or cyclohexanone, strongly polar solvents, such as dimethylformamide and dimethyl sulfoxide, as well as water.
As solid carriers there are suitable: for example ammonium salts and ground natural minerals, such as kaolins, clays, talc, chalk, quartz, attapulgite, montmorillonite or diatomaceous earth, and ground synthetic minerals, such as highly disperse silicic acid, alumina and silicates, as solid carriers for granules there are suitable: for example crushed and fractionated natural rocks such as calcite, marble, pumice, sepiolite and dolomite, as well as synthetic granules of inorganic and organic meals, and granules of organic material such as sawdust, coconut shells, maize cobs and tobacco stalks; as emulsifying and/or foam-forming agents there are suitable: for example non-ionic and anionic emulsifiers, such as polyoxyethylene-fatty acid esters, polyoxyethylene-fatty alcohol ethers, for example alkylaryl polyglycol ethers, alkylsulphonates, alkylsulphates, arylsulphonates as well as albumin hydrolysation products; as dispersing agents there are suitable: for example lignin-sulphite waste liquors and methylcellulose.

Adhesives such as carboxymethylcellulose and natural and synthetic polymers in the form of powders, granules or latices, such as gum arabic, polyvinyl alcohol and polyvinyl acetate, as well as natural phospholipids, such as cephalins and lecithins, and synthetic phospholipids, can be used in the formulations. Further additives can be mineral and vegetable oils.

It is possible to use colorants such as inorganic pigments, for example iron oxide, titanium oxide and Prussian Blue, and organic dyestuffs, such as alizarin dyestuffs, azo dyestuffs and metal phthalocyanine dyestuffs, and trace nutrients such as salts of iron, manganese, boron, copper, cobalt, molybdenum and zinc.

The formulations in general contain between 0.1 and 95 per cent by weight of active compound, preferably between 0.5 and 90%.

The active compounds according to the invention,
as such or in the form of their formulations, can also be used, for combating weeds, as mixtures with known herbicides, finished formulations or tank mixes being possible.

Possible components for the mixtures are known herbicides, such as, for example, 1-amino-6-ethylthio-3-(2,2-dimethylpropyl)-1,3,5-triazine-2,4(1H,3H)-dione or N-(2-benzothiazolyl)-N,N'-dimethylurea for combating weeds in cereals; 4-amino-3-methyl-6-phenyl-1,2,4-triazin-
5(4H)-one for combating weeds in sugar beet, and 4-amino-
6-(1,1-dimethylhexyl)-3-methylthio-1,2,4-triazin-5(4H)-one for combating weeds in soya beans, and furthermore also 2,4-dichlorophenoxyacetic acid; 4-(2,4-dichlorophenoxy)-butyric acid; 2,4-dichlorophenoxypropionic acid; methyl 2-
[[(6-dimethoxy-4-[[2-yl]-amino]carbonyl-amino] sulphonyl]-methyl]-benzoate; 3-isopropyl-2,1,3-benzothia-
diazin-4-one 2,2-dioxide; methyl 5-(2,4-dichlorophenoxy)-
2-nitrobenzoate; 3,5-dibromo-4-hydroxy-benzonitrile; N-
(butoxymethyl)-2-chloro-N-(2,6-dimethylphenyl)-acetamide;
2-chloro-N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-amino-
carbonyl]-benzenesulphonamide; N,N-dimethyl-N'-3-chloro-
4-methylphenyl]-urea; 2-(4-(2,4-dichlorophenoxy)-phenoxy]-
propionic acid, its methyl or its ethyl ester; 3,6-dichloro-
2-pyridinecarboxylic acid; 4-amino-6-t-butyl-3-ethylthio-
1,2,4-triazin-5(4H)-one; 2-(4-[[6-chloro-2-benzoxazolyl]-
one of its methyl or its ethyl ester;trimethylsilylmethyl 2-[4-(3,5-dichloropyrid-2-yl-
2-(4,5-dihydro-4-methyl-4-isoo-
oxo]-phenoxy]-propionate; 2-(4,5-dihydro-4-methyl-4-isoo-
pyridine-3-carboxylic acid; 3,5-diido-4-hydroxybenzonitrile; N,N-dimethyl-N'-4-isoo-
(2-methyl-4-chlorophenoxy)-acetic acid; (4-chloro-2-methylphenoxy)-propionic acid; 2-[[4-meth-
oxy-6-methyl-1,3,5-triazin-2-yl]-amino]carbonyl-amino]-
sulphonyl]-benzoic acid or its methyl ester; 5-ethyl N,N-
hexamethylene-thiocarbamate; 4-(di-n-propylamino)-3,5-di-
nitrobenzenesulphonamide; N-(1-ethylpropyl)-3,4-dimethyl-
2,6-dinitroaniline; α-chloro-2',6'-diethyl-N-(2-propoxy-ethyl)-acetanilide; 2-chloro-N-isopropylacetanilide; 4-ethylamino-2-t-butylamino-6-methylthio-s-triazine; methyl 3-[[[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]-amino]-carbonyl]-amino]-sulphonyl-thiophene-2-carboxylate; N,N-di-isopropyl-S-(2,3,3-trichloroallyl)-thiocarbamate and 3,5,6-trichloro-2-pyridyloxyacetic acid. Surprisingly, some mixtures also show a synergistic action.

Mixtures with other known active compounds, such as fungicides, insecticides, acaricides, nematicides, bird repellants, plant nutrients and agents which improve soil structure, are also possible.

The active compounds can be used as such, in the form of their formulations or in the use forms prepared therefrom by further dilution, such as ready-to-use solutions, suspensions, emulsions, powders, pastes and granules. They are used in the customary manner, for example by watering, spraying, atomizing or scattering.

The active compounds according to the invention can be applied either before or after emergence of the plants.

They can also be incorporated into the soil before sowing.

The amount of active compound used can vary within a relatively wide range. It depends essentially on the nature of the desired effect. In general, the amounts used are between 0.01 and 15 kg of active compound per hectare of soil surface, preferably between 0.05 and 10 kg per ha.

The preparation and use of the active compounds according to the invention can be seen from the following examples.
Preparation Examples

Example 1

A mixture of 6.5 g (0.01 mol) of N-(4-methoxy-6-methyl-pyrimidin-2-yl)-N"-methoxy-N""-bis-(2-bromo-phenylsulphonyl)-guanidine, 5.6 g (0.03 mol) of p-toluenesulphonyl hydrazide, 30 ml of ethanol and 10 ml of water is heated to boiling under reflux for 60 minutes and then stirred for 20 hours at 20°C. The precipitated crystalline product is isolated by filtering with suction.

3.1 g (51% of theory) of N-(4-methoxy-6-methyl-pyrimidin-2-yl)-N"-(4-methyl-phenylsulphonylaminio)-N""-(2-bromo-phenylsulphonyl)-guanidine of melting point 156°C are obtained.

The compounds of the formula (I) shown in Table 2 below can be prepared analogously to Example 1 and corresponding to the general description of the process according to the invention.
### Table 2: Examples of compounds of the formula (I)

![Reaction Structure](image)

<table>
<thead>
<tr>
<th>Example No.</th>
<th>R¹</th>
<th>R²</th>
<th>R³</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>Melting Point (°C)</th>
</tr>
</thead>
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<tr>
<td>2</td>
<td>H</td>
<td>COOCH₃</td>
<td>CH₃</td>
<td>N</td>
<td>CH</td>
<td>C-CH₃</td>
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<tr>
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<td>OCH₃</td>
<td>N</td>
<td>CH</td>
<td>C-OCH₃</td>
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</tr>
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<td>OCF₃</td>
<td>OCH₃</td>
<td>N</td>
<td>CH</td>
<td>C-OCH₃</td>
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<td>OCH₃</td>
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<td>174</td>
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<td>6</td>
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<td>COOCH₃</td>
<td>OCH₃</td>
<td>N</td>
<td>CH</td>
<td>C-OCH₃</td>
<td>177</td>
</tr>
<tr>
<td>Example No.</td>
<td>R¹</td>
<td>R²</td>
<td>R³</td>
<td>X</td>
<td>Y</td>
<td>Z</td>
<td>Melting point (°C)</td>
</tr>
<tr>
<td>------------</td>
<td>----</td>
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<td>---</td>
<td>---</td>
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<td>-------------------</td>
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<td>OCH₃</td>
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<td>CH</td>
<td>C-OCH₃</td>
<td>166</td>
</tr>
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<td>CH</td>
<td>C-OCH₃</td>
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<tr>
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<td>H</td>
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<td>OCH₃</td>
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<td>CH</td>
<td>C-OCH₃</td>
<td>174</td>
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<td>CH</td>
<td>C-OCH₃</td>
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</tr>
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<td>H</td>
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<td>N</td>
<td>CH</td>
<td>C-OCH₃</td>
<td>184</td>
</tr>
<tr>
<td>Example No.</td>
<td>( R^1 )</td>
<td>( R^2 )</td>
<td>( R^3 )</td>
<td>( X )</td>
<td>( Y )</td>
<td>( Z )</td>
<td>Melting point (^\circ)C</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
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<td>------</td>
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<td>------------------</td>
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<tr>
<td>12</td>
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<td>( \text{COOCH}_3 )</td>
<td>( \text{CF}_3 )</td>
<td>( \text{OCH}_3 )</td>
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<td>CH</td>
<td>C-OCH(_3)</td>
</tr>
<tr>
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<td>( \text{C}_3\text{H}_7 )</td>
<td>( \text{OCH}_3 )</td>
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<td>CH</td>
<td>C-OCH(_3)</td>
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<td>( \text{CF}_2\text{Cl} )</td>
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<td>CH</td>
<td>C-OCH(_3)</td>
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<td>CH</td>
<td>C-OCH(_3)</td>
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</tr>
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<td>17 K</td>
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**Table 2 - continuation**

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<th>R¹</th>
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<th>R³</th>
<th>X</th>
<th>Y</th>
<th>Z</th>
<th>Melting point (°C)</th>
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</table>
Table 2 - continuation.

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<th>( R^3 )</th>
<th>( X )</th>
<th>( Y )</th>
<th>( Z )</th>
<th>Melting point (°C)</th>
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</thead>
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<td>( \text{CH}_3 )-</td>
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<td>( \text{OCH}_3 )-</td>
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<td>( \text{CH}_3 )-</td>
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<td>( \text{OCH}_3 )-</td>
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<td>( \text{CH}_3 )-</td>
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<td>( \text{N} )-</td>
<td>( \text{C} )-</td>
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<td>(\text{N(CH}_3)_2)</td>
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<td><img src="image" alt="Structure 78" /></td>
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<td>C-(\text{Cl})</td>
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**Table 2 - continuation**

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<th>R&lt;sup&gt;1&lt;/sup&gt;</th>
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<th>R&lt;sup&gt;3&lt;/sup&gt;</th>
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**Table 2 - continuation**

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<td>Z</td>
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Table 2 - continuation

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<td>N</td>
<td>C-OCH&lt;sub&gt;3&lt;/sub&gt;</td>
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Use examples

The compound shown below is used as the comparison substance in the following use examples:

\[
\begin{array}{c}
\text{C}_1 \\
\text{C}_2 \\
\text{I} \\
\text{CH}_3 \\
\text{NH} \\
\text{NH-CO-CH}_3 \\
\text{N}-(4,6\text{-Dimethyl-pyrimidin-2-yl})-\text{N}''\text{-acetamido-N}''\text{-}(2\text{-chloro-phenylsulphonyl})\text{-guanidine}
\end{array}
\]

(known from EP-A 121,082).

The formulae of the compounds according to the invention used for the use examples are - with the numbering of the preparation examples ("Example No.") - shown individually below.

\[
\begin{array}{c}
\text{Br} \\
\text{SO}_2 \text{-N} \\
\text{C} \\
\text{NH} \\
\text{OCH}_3 \\
\text{NH-SO}_2 \text{-CH}_3 \\
\text{NH-CO-CH}_3 \\
\text{N}-(4,6\text{-Dimethyl-pyrimidin-2-yl})-\text{N}''\text{-acetamido-N}''\text{-}(2\text{-chloro-phenylsulphonyl})\text{-guanidine}
\end{array}
\]

(1)

Le A 25 398

- 53 -
5

10

15

20

25

30

35

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- 54 -
**Example A**

Pre-emergence test

Solvent: 5 parts by weight of acetone

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent, the stated amount of emulsifier is added and the concentrate is diluted with water to the desired concentration.

Seeds of the test plants are sown in normal soil and, after 24 hours, watered with the preparation of the active compound. It is expedient to keep constant the amount of water per unit area. The concentration of the active compound in the preparation is of no importance, only the amount of active compound applied per unit area being decisive. After three weeks, the degree of damage to the plants is rated in % damage in comparison to the development of the untreated control. The figures denote:

- 0% = no action (like untreated control)
- 100% = total destruction

In this test, for example, the compounds according to the Preparation Examples (27), (29) and (35) show considerably stronger action than the comparison substance (A).
Example B
Post-emergence test
Solvent: 5 parts by weight of acetone
Emulsifier: 1 part by weight of alkylaryl polyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent, the stated amount of emulsifier is added and the concentrate is diluted with water to the desired concentration.

Test plants which have a height of 5 - 15 cm are sprayed with the preparation of the active compound in such a way as to apply the particular amounts of active compound desired per unit area. The concentration of the spray liquor is so chosen that the particular amounts of active compound desired are applied in 2,000 l of water/ha. After three weeks, the degree of damage to the plants is rated in % damage in comparison to the development of the untreated control. The figures denote:

0% = no action (like untreated control)
100% = total destruction

In this test, for example, the compounds according to the Preparation Examples (1), (3), (4), (5), (6), (7), (8), (9), (19), (11), (12), (13), (21), (22), (23), (24), (25), (26), (27), (29) and (35) show considerably stronger action than the comparison substance (A).
Example C

Test on transplanted paddy rice

Solvent: 5 parts by weight of acetone
Emulsifier: 1 part by weight of benzyloxypolyglycol ether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent, the stated amount of emulsifier is added and the concentrate is diluted to the desired concentration.

Plant receptacles (surface area 1/5000 are) are filled with soil from a paddy-field. Two rice plants (variety: Kinmaze) in the 2nd - 3rd leaf stage (about 10 cm tall) are transplanted into the receptacles. Seeds of Echinochloa crus galli and/or Monochoria vaginalis and/or small rhizome sections of Eleocharis acicularis L. are sown in the moist earth. 2 days after transplanting the rice, the soil is covered with water to a depth of 3 cm. The active compound preparation is applied to the surface of the water. The concentration of the active compound in the preparation is of no importance, only the amount of active compound applied per unit area being decisive.

After applying the active compound, a vertically descending flow of water having a velocity of 2 - 3 cm per day is set up through the plant receptacle for 2 days.

The test batches are then kept under overflowing conditions, where the water depth is 3 cm.

After 4 weeks, the degree of damage to the plants is evaluated in % damage (or weed action) in comparison to an untreated control.

The figures indicate:
0 % = no action (like the untreated control)
100 % = total destruction

In this test, the good tolerability of the active compounds according to the invention - in particular of compounds (7) and (10) - in rice along with, at the same time, a very good weed action is apparent, whereas the very similar Le A 25 398
previously known compound (A) causes severe damage to the rice.
The claims defining the invention are as follows:

1. Sulphonylamino-guanidinoazines of the general formula (I)

\[
R^1-\text{SO}_2-N^+\text{C}^N\text{N}^-\text{NH}-\text{NH-SO}_2-R^2
\]  

wherein

\( R^9 \) and \( R^{10} \) are identical or different and stand for hydrogen, fluorine, chlorine, bromine, iodine, cyano, nitro, C1-C6-alkyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C1-C4-alkoxy-carbonyl, C1-C4-alkylaminocarbonyl, di-(C1-C4-alkyl)-amino-carbonyl, hydroxyl, C1-C4-alkoxy, formyloxy, C1-C4-alkylcarbonyloxy, C1-C4-alkoxy-carbonyloxy, C1-C4-alkylaminocarbonyloxy, C1-C4-alkylthio, C1-C4-alkylsulphonil, C1-C4-alkylsulphonyl, di-(C1-C4-alkyl)-amino-sulphonil, C3-C6-cycloalkyl or phenyl[)], for C2-C6-alkenyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C1-C4-alkoxy-carbonyl, carboxyl or phenyl[)], for C2-C6-alkynyl (which is optionally substituted by fluorine, chlorine, bromine, cyano, C1-C4-alkoxy-carbonyl, carboxyl or phenyl[)], for C1-C4-alkoxy [which is optionally substituted by fluorine, chlorine, bromine, cyano, C1-C4-alkoxy-carbonyl, carboxyl, C1-C4-alkoxy-carbonyl, C1-C4-alkoxy, C1-C4-alkylthio, C1-C4-alkylsulphonyl or C1-C4-alkylsulphonyl], for C1-C4-alkylthio (which is optionally substituted by fluorine, chlorine, bromine, cyano, carboxyl, C1-C4-
alkoxy-carbonyl, C₁-C₄-alkylthio, C₁-C₄-alkyl-
sulphinyi or C₁-C₄-alkylsulphonyl], for C₃-C₆-
alkenyloxy [which is optionally substituted by fluo-
rine, chlorine, bromine, cyano or C₁-C₄-alkoxy-
carbonyl], for C₂-C₆-alkenylthio [which is option-
ally substituted by fluorine, chlorine, bromine,
cyano, nitro, C₁-C₃-alkylthio or C₁-C₄-alkoxy-
carbonyl], C₃-C₆-alkinyloxy, C₃-C₆-alkinylthio
or for the radical \(-S(\mathcal{O})_p-R^{11}\),

wherein

- \(p\) stands for the numbers 1 or 2 and
- \(R^{11}\) stands for \(C_1-C_4\)-alkyl [which is optionally substituted by fluorine, chlorine, bromine, cyano or \(C_1-C_4\)-alkoxy-carbonyl], \(C_3-C_6\)-alkenyl, \(C_1-C_4\)-alkoxy, \(C_1-C_4\)-alkoxy-\(C_1-C_4\)-alkylamino, \(C_1-C_4\)-alkylamino, di-(\(C_1-C_4\)-alkyl)-amino or for the radical \(-\text{NHOR}^{12}\),

wherein

- \(R^{12}\) stands for \(C_1-C_{12}\)-alkyl [which is optionally substituted by fluorine, chlorine, cyano, \(C_1-C_4\)-alkoxy, \(C_1-C_4\)-alkylthio, \(C_1-C_4\)-alkyl-sulphinyl, \(C_1-C_4\)-alkylsulphonyl, \(C_1-C_4\)-alkyl-carbonyl, \(C_1-C_4\)-alkoxy-carbonyl, \(C_1-C_4\)-alkylamino-carbonyl or di-(\(C_1-C_4\)-alkyl)-amino-carbonyl], for \(C_3-C_6\)-alkenyl [which is optionally substituted by fluorine, chlorine or bromine], \(C_3-C_6\)-alkinyl, \(C_3-C_6\)-cycloalkyl, \(C_3-C_6\)-cycloalkyl-\(C_1-C_2\)-alkyl, phenyl-\(C_1-C_2\)-alkyl [which is optionally substituted by fluorine, chlorine, nitro, cyano, \(C_1-C_4\)-alkyl, \(C_1-C_4\)-alkoxy or \(C_1-C_4\)-alkoxy-carbonyl], for benzylhydryl or for phenyl [which is optionally substituted by fluorine, chlorine, nitro, cyano, \(C_1-C_4\)-alkyl, trifluoromethyl, \(C_1-C_4\)-alkoxy, \(C_1-C_2\)-fluoroalkoxy, \(C_1-C_4\)-alkylthio, trifluoromethylthio or \(C_1-C_4\)-alkoxy-carbonyl], \(R^9\) and \(R^{10}\) furthermore stand for phenyl or phenoxy, for amino, \(C_1-C_4\)-alkylcarbonylamino, \(C_1-C_4\)-alkoxy-carbonylamino, \(C_1-C_4\)-alkylamino-carbonylamino, di-(\(C_1-C_4\)-alkyl)-amino-carbonylamino, or for the radical \(-\text{CO}-R^{13}\),

wherein

- \(R^{13}\) stands for \(C_1-C_6\)-alkyl, \(C_1-C_6\)-alkoxy, \(C_3-C_6\)-cycloalkoxy, \(C_3-C_6\)-alkenyloxy, \(C_1-C_4\)-alkylthio, \(C_1-C_4\)-alkylamino, \(C_1-C_4\)-alkoxy-
amino, C₁-C₄-alkoxy-C₁-C₄-alkylamino or di-(C₁-C₄-alkyl)-amino [which are optionally substituted by fluorine and/or chlorine],

R⁹ and R¹⁰ furthermore stand for C₁-C₄-alkylsulphonyloxy, di-(C₁-C₄-alkyl)-aminosulphonyl-amino, thiazolyloxy or for the radical -CH=N-R¹⁴,

wherein

R¹⁴ stands for C₁-C₆-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkyl-sulphinyl or C₁-C₄-alkylsulphonyl, for benzyl which is optionally substituted by fluorine or chlorine, for C₃-C₆-alkenyl or C₃-C₆-alkynyl which are optionally substituted by fluorine or chlorine, for phenyl which is optionally substituted by fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-alkoxy, trifluoromethyl, trifluoromethoxy or trifluoromethythio, for C₁-C₆-alkoxy, C₃-C₆-alkenox, C₃-C₆-alkynoxy or benzylxy which are optionally substituted by fluorine and/or chlorine, for amino, C₁-C₄-alkylamino, di-(C₁-C₄-alkyl)-amino, phenylamino, C₁-C₄-alkyl-carbonyl-amino, C₁-C₄-alkoxy-carbonylamino, C₁-C₄-alkyl-sulphonlamino or for phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,

in addition,

R¹ stands for the radical 

wherein

R¹⁵ stands for hydrogen or C₁-C₄-alkyl,

R¹⁶ and R¹⁷ are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C₁-C₄-alkyl [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine], carboxyl, C₁-C₄-alkoxy-carbonyl,
C1-C4-alkylsulphonyl or di-(C1-C4-alkyl)-
aminosulphonyl;

in addition
R1 stands for the radical

wherein
R18 and R19 are identical or different and stand
for hydrogen, fluorine, chlorine, bromine, nitro,
cyano, C1-C4-alkyl [which is optionally substi-
tuted by fluorine and/or chlorine] or C1-C4-alkoxy
[which is optionally substituted by fluorine and/or
chlorine];

in addition
R1 stands for the radical

wherein
R20 and R21 are identical or different and stand
for hydrogen, fluorine, chlorine, bromine, nitro,
cyano, C1-C4-alkyl [which is optionally substi-
tuted by fluorine and/or chlorine], C1-C4-alkoxy
[which is optionally substituted by fluorine and/or
chlorine], for C1-C4-alkylthio, C1-C4-alkyl-
sulphynyl or C1-C4-alkylsulphonyl [which are
optionally substituted by fluorine and/or chlorine],
and also for di-(C1-C4-alkyl)-aminosulphonyl or
C1-C4-alkoxy-carbonyl;

in addition
R1 stands for the radical

wherein
R22 and R23 are identical or different and stand
for hydrogen, fluorine, chlorine, bromine, C1-C4-
alkyl [which is optionally substituted by fluorine
and/or bromine], C1-C4-alkoxy [which is option-
ally substituted by fluorine and/or chlorine], for
C1-C4-alkylthio, C1-C4-alkylsulphynyl or
C1-C4-alkylsulphonyl [which are optionally sub-
stituted by fluorine and/or chlorine], or for di-
(C1-C4-alkyl)-aminosulphonyl;

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$R^1$ stands for the radical $\text{[Diagram]}$.

Wherein

$R^{24}$ and $R^{25}$ are identical or different and stand for hydrogen, fluorine, chlorine, bromine, cyano, nitro, $C_1-C_4$-alkyl (which is optionally substituted by fluorine and/or chlorine), $C_1-C_4$-alkoxy (which is optionally substituted by fluorine and/or chlorine), $C_1-C_4$-alkylthio, $C_1-C_4$-alkylsulphinyl or $C_1-C_4$-alkylsulphonyl (which is optionally substituted by fluorine and/or chlorine), di-(C1-C4-alkyl)-amino-sulphonyl or C1-C4-alkoxy-carbonyl, and

A stands for oxygen, sulphur or the grouping N-Z$^1$,

Wherein

$Z^1$ stands for hydrogen, $C_1-C_4$-alkyl (which is optionally substituted by fluorine, chlorine, bromine or cyano), $C_3-C_6$-cycloalkyl, benzyl, phenyl (which is optionally substituted by fluorine, chlorine, bromine or nitro), $C_1-C_4$-alkylcarbonyl, $C_1-C_4$-alkoxy-carbonyl or di-(C1-C4-alkyl)-aminocarbonyl;

in addition $R^1$ stands for the radical $\text{[Diagram]}$.

Wherein

$R^{26}$ stands for hydrogen, $C_1-C_5$-alkyl or halogen, $R^{27}$ stands for hydrogen or $C_1-C_5$-alkyl and $Y^1$ stands for sulphur or the grouping N-R$^{28}$,

Wherein

$R^{28}$ stands for hydrogen or $C_1-C_5$-alkyl,

in addition $R^1$ stands for the radical $\text{[Diagram]}$.

Wherein

$R^{29}$ stands for hydrogen, $C_1-C_4$-alkyl or phenyl,

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$R^{30}$ stands for hydrogen, halogen, cyano, nitro, $C_1$-$C_4$-alkyl [which is optionally substituted by fluorine and/or chlorine], $C_1$-$C_4$-alkoxy [which is optionally substituted by fluorine and/or chlorine] or $C_1$-$C_4$-alkoxy-carbonyl and $R^{31}$ stands for hydrogen, halogen or $C_1$-$C_4$-alkyl,

in addition,
$R^1$ stands for the radical $R^{j 0 2}$

wherein
$R^{32}$ stands for $C_1$-$C_3$-alkyl and
$R^{33}$ stands for $C_1$-$C_4$-alkyl,

in addition
$R^1$ stands for the radical $R^{32}$

in addition
$R^2$ has the meaning given above as preferred for $R^1$, but does not have to be identical with $R^1$ in each individual case, and in addition can stand for di-$(C_1$-$C_3$-alkyl)-amino or for $C_1$-$C_8$-alkyl which is optionally substituted by halogen,

in addition
$R^3$ stands for hydrogen, fluorine, chlorine, bromine, $C_1$-$C_4$-alkyl, $C_1$-$C_4$-halogenoalkyl, $C_1$-$C_2$-alkoxy-$C_1$-$C_2$-alkyl, $C_1$-$C_4$-alkoxy, $C_1$-$C_4$-halogenoalkoxy, $C_1$-$C_4$-alkylthio, $C_1$-$C_4$-halogenoalkylthio, amino, $C_1$-$C_4$-alkylamino, dimethylamino or diethylamino,

$X$ stands for nitrogen, or -CR$^4$- grouping,

$Y$ stands for nitrogen or a -CR$^5$- grouping,

wherein
$R^4$ stands for hydrogen, fluorine, chlorine, bromine, cyano, methyl, formyl, acetyl, methoxycarbonyl or ethoxycarbonyl and
$Z$ stands for nitrogen or a -CR$^5$- grouping,

wherein
$R^5$ stands for hydrogen, fluorine, chlorine,
bromine, C_{1}-C_{4}-alkyl, C_{1}-C_{4}-alkoxy, C_{1}-C_{4}-halogenoalkoxy, C_{1}-C_{4}-alkylthio, C_{1}-C_{4}-alkylamino, dimethylamino or diethylamino, and

M stands for hydrogen or a sodium equivalent, a potassium equivalent or a calcium equivalent, an ammonium equivalent, a C_{1}-C_{6}-alkylammonium equivalent, a di-(C_{1}-C_{4}-alkyl)-ammonium or a tri-(C_{1}-C_{4}-alkyl)-ammonium equivalent,

where N'(4,6-dimethyl-pyrimidin-2-yl)-N''-(4-methylphenylsulphonylamino)-N'''-(2-chloro-phenylsulphonyl)-guanidine is excluded.

2. Sulphonylaminoguanidinoazines of the general formula (I) according to Claim 1, characterized in that therein

\[ R^1 \] stands for the radical

\[ \begin{array}{c}
| \text{R}^9 | \\
| \text{R}^{10} | \\
| \text{R}^9 | \\
\end{array} \]

wherein

\[ \text{R}^9 \] stands for fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy, C_{1}-C_{3}-alkylthio, C_{1}-C_{3}-alkylsulphynl, C_{1}-C_{3}-alkylsulphonyl, dimethylaminosulphonyl, diethylaminosulphonyl, N-methoxy-N-methylaminosulphonyl, phenyl, phenoxy or C_{1}-C_{3}-alkoxy-carbonyl and

\[ \text{R}^{10} \] stands for hydrogen;

in addition

\[ \text{R}^1 \] stands for the radical

\[ \begin{array}{c}
| \text{R}^{15} | \\
| \text{R}^{17} | \\
| \text{R}^{15} | \\
\end{array} \]

wherein

\[ \text{R}^{15} \] stands for hydrogen,

\[ \text{R}^{16} \] stands for fluorine, chlorine, bromine, methyl, methoxy, ethoxy, difluoromethoxy, trifluoromethoxy, methoxycarbonyl, ethoxycarbonyl, methylsulphonyl or dimethylaminosulphonyl and

\[ \text{R}^{17} \] stands for hydrogen;
$R^1$ stands for the radical

wherein

$R$ stands for C$_1$-C$_2$-alkyl, or

$R^1$ stands for the radical

wherein

$R$ stands for C$_1$-C$_2$-alkyl;

in addition

$R^2$ stands for C$_1$-C$_4$-alkyl which is optionally substituted by fluorine or chlorine or for phenyl which is optionally substituted by fluorine, chlorine, bromine, C$_1$-C$_3$-alkyl, trifluoromethyl, chlorodifluoromethyl, methoxy, ethoxy, difluoromethoxy, trifluoromethoxy, amino, acetamido, methoxycarbonyl and/or ethoxycarbonyl,

$R^3$ stands for hydrogen, fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, ethoxy, difluoromethoxy, methylthio, ethylthio, amino, methylamino, ethylamino, dimethylamino or diethylamino,

$X$ stands for nitrogen, or a CR$^4$-grouping,

$Y$ stands for nitrogen or a CR$^4$-grouping,

wherein

$R^4$ stands for hydrogen, fluorine, chlorine or methyl,

$Z$ stands for a CR$^5$-grouping,

wherein

$R^5$ stands for hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, propoxy, isopropoxy, difluoromethoxy, methylthio, ethylthio, methylamino, ethylamino, dimethylamino or diethylamino, and

$M$ stands for hydrogen or a sodium equivalent, potassium equivalent or calcium equivalent, an ammonium equivalent or a C$_1$-C$_4$-alkyl-ammonium equivalent,
where \(N^1-(4,6\text{-dimethyl-pyrimidin-2-yl})-N^2-(4\text{-methyl-phenyl-sulphonyl})-N^6-(2\text{-chloro-phenylsulphonyl})\)-guanidine is excluded.

3. Process for the preparation of sulphonylaminoguanidinoazines of the general formula (I) according to Claim 1, characterized in that sulphonyl compounds of the general formula (II)

\[
\begin{align*}
R^1\text{-SO}_2\text{-N} & \begin{array}{c}
\backslash \
\backslash \
\backslash \
\end{array}
\begin{array}{c}
\text{C} \
\text{X} \
\text{Y} \
\end{array}
\begin{array}{c}
\text{N} \
\text{Z} \
\text{R}^3 \
\end{array}
\end{align*}
\]

(II)

in which
- \(R^1, R^3, X, Y\) and \(Z\) have the meanings mentioned in Claim 1 and
- \(A\) stands for one of the leaving groups given below:
  - \(R^6\text{-SO}_2\text{-N-O}^7\text{R}^7\) or \(-Q\text{-R}^8\),

wherein
- \(R^6\) has the meaning given in Claim 1 for \(R^1\), but need not be identical with \(R^1\) in each individual case,
- \(R^7\) stands for alkyl, alkenyl or aralkyl,
- \(R^8\) stands for alkyl, aralkyl or aryl and
- \(Q\) stands for oxygen or sulphur,

are reacted with sulphonyl hydrazides of the general formula (III)

\[
R^2\text{-SO}_2\text{-NH-NH}_2
\]

(III)

in which
- \(R^2\) has the meaning given in Claim 1,

if desired in the presence of a diluent, and if desired the products thus obtained are converted into salts by customary methods.
4. A sulphonylaminoguanidinoazine compound substantially as herein described with reference to any one of Examples 1 to 113 in Table 2.

5. A herbicidal composition which comprises a sulphonylaminoguanidinoazine of the formula (I) in accordance with any one of claims 1, 2 or 4 together with a herbicidally effective diluent, carrier, extender, or surface-active agent.

6. A method for combating undesired plant growth, characterized in that a sulphonylaminoguanidinoazine of the formula (I) according to any one of claims 1, 2 or 4 are applied to and allowed to act on the undesired plants or their environment.

7. A sulphonylaminoguanidinoazine of the formula (I) according to any one of claims 1, 2 or 4 whenever used for combating plant growth.

8. A process for the preparation of a herbicidal composition, characterized in that a sulphonylaminoguanidinoazine of the formula (I) according to any one of claims 1, 2 or 4 are mixed with at least one diluent, carrier, extender or surface-active agent.

9. A herbicidal composition substantially as herein described with reference to any one of the Use Examples, excluding the comparison example.

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BAYER AKTIENGESELLSCHAFT
By Its Patent Attorneys
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