

PL79338/EA/AMD/3945T/42

PATENT APPLICATION FORM

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

Regulation 9

603244

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~~ "Sulphonylaminoguanidinoazines.

which is described in the accompanying complete specification.

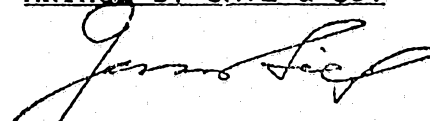
For a Convention application - details of basic application-

<u>Number</u>	<u>Country</u>	<u>Date of Application</u>
P 37 26 269.6	Germany	7th August, 1987

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.


J.G. SIELY F.I.P.A.A.

To:
Commissioner of Patents

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

ASC 1

APPROVED AND AMENDMENTS

RECEIVED 15 - 8 - 90

01334 29/07/88



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PATENT DECLARATION FORM (CONVENTION)
COMMONWEALTH OF AUSTRALIA
Patents Act 1952

Regulation
12 (2)

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) Insert title
of invention.

(a) Sulphonylaminoguanidinoazines

(b) Insert full
name(s) of
declarant(s).

I/We (b) Joachim Gremm and Günter Schumacher
both are secretaries

(c) Insert
address(es) of
declarant(s).

of (c) BAYER AKTIENGESELLSCHAFT, D 5090 Leverkusen, Germany

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) Insert
country in
which basic
application(s)
was/were
filed.

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

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

by (f) Bayer Aktiengesellschaft

(f) Insert full
names of basic
applicant(s).

in (d) on (e)

by (f) on (e)

in (d) on (e)

by (f) on (e)

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)

(g) Insert full
name(s) of
actual
inventor(s)

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

(h) Insert
address(es) of
actual
inventor(s).

of (h) 1) Bockhackstrasse 55, D 4000 Duesseldorf 13, Germany
2) Im Johannistal 20, D 5600 Wuppertal 1, Germany
3) Carl-Langhans-Strasse 27, D 4019 Monheim, Germany
4) Lichtenberger Strasse 30, D 4019 Monheim, 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) Set out how
applicant(s)
derive(s) title
from actual
inventor(s)
i.e., assignee of
the invention
from the actual
inventor(s).

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

Attestation or
legalization
not required.

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 25 298-AU

The Commissioner of Patents

Joachim Gremm

Günter Schumacher

Signature of Declarant(s)

GOLD FIELDS HOUSE
1 ALFRED STREET
SYDNEY, N.S.W.

(Form 8)

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Bankers: COMMONWEALTH
TRADING BANK
OF AUSTRALIA

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PATENT DECLARATION FORM (CONVENTION)
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Regulation
12 (2)

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

(a) Insert title
of invention.

(a) Sulphonylaminoguanidinoazines

(b) Insert full
name(s) of
declarant(s).

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

(c) Insert
address(es) of
declarant(s).

of (c) BAYER AKTIENGESELLSCHAFT; D 5090 Leverkusen, Germany

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.

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country or countries on the following date(s) namely:—

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country in
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filed.
(e) Insert date
of basic
application(s).
(f) Insert full
names of basic
applicant(s).

in (d) Fed. Rep. of Germany on (e) August 7, 1987
by (f) Bayer Aktiengesellschaft
in (d) on (e)
by (f)
in (d) on (e)
by (f)

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)

(g) Insert full
name(s) of
actual
inventor(s).
(h) Insert
address(es) of
actual
inventor(s).

3. (g) 5) Hans-Jochem Riebel 6) Hans-Joachim Santel
7) Robert R. Schmidt 8) Harry Strang
of (h) 5) In der Beek 92, D 5600 Wuppertal 1, Germany
6) Gruenstrasse 9a, D 5090 Leverkusen 1, Germany
7) Im Waldwinkel 100, D 5060 Bergisch Gladbach 2, Germany
8) Unterdorfstrasse 6A, D 4000 Duesseldorf 31, 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) Set out how
applicant(s)
derive(s) title
from actual
inventor(s)
i.e., assignee of
the invention
from the actual
inventor(s).
Attestation or
legalization
not required.

(i) The company 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:

Le A 25 398-AU

The Commissioner of Patents

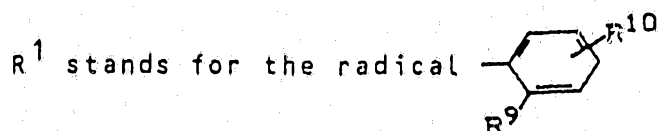
ARTHUR S. CAVE & CO.
PATENT AND TRADE MARK ATTORNEYS
SYDNEY

Günter Schumacher
Joachim Gremm
Signature of Declarant(s)

(12) PATENT ABRIDGMENT (11) Document No. AU-B-20218/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 603244

- (54) Title
HERBICIDAL GUANIDINO-PYRIMIDINES AND -S-TRIAZINES
- (51)⁴ International Patent Classification(s)
C07D 239/42 A01N 047/44 C07D 239/47 C07D 239/52
C07D 251/16 C07D 251/22 C07D 251/46 C07D 251/48
C07D 251/52 C07D 401/12 C07D 403/12 C07D 405/12
C07D 409/12 C07D 417/12
- (21) Application No. : 20218/88 (22) Application Date : 29.07.88
- (30) Priority Data
- (31) Number (32) Date (33) Country
3726269 07.08.87 DE FEDERAL REPUBLIC OF GERMANY
- (43) Publication Date : 09.02.89
- (44) Publication Date of Accepted Application : 08.11.90
- (71) Applicant(s)
BAYER AKTIENGESELLSCHAFT
- (72) Inventor(s)
KLAUS-HELMUT MULLER; HARRY STRANG; ROBERT R SCHMIDT; HANS-JOACHIM
SANTEL; HANS-JOCHIM RIEBEL; THEODOR PFISTER; ROLF KIRSTEN; CHRISTA
FEST
- (74) Attorney or Agent
ARTHUR S CAVE & CO, GPO Box 3876, SYDNEY NSW 2001
- (56) Prior Art Documents
AU 46655/85 C07D 239/42
AU 46650/85 C07D 239/42
AU 24259/84 C07D 239/42
- (57) Claim

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



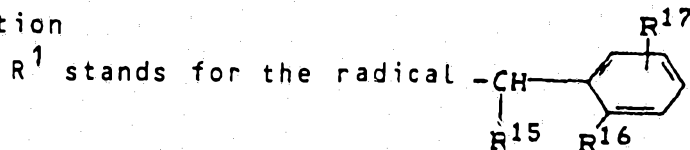
wherein

R⁹ stands for fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy, C₁-C₃-alkylthio, C₁-C₃-alkylsulphinyl, C₁-C₃-alkylsulphonyl, dimethylaminosulphonyl, diethylaminosulphonyl, N-methoxy-N-methylaminosulphonyl, phenyl, phenoxy or C₁-C₃-alkoxy-carbonyl and
R¹⁰ stands for hydrogen;

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in addition



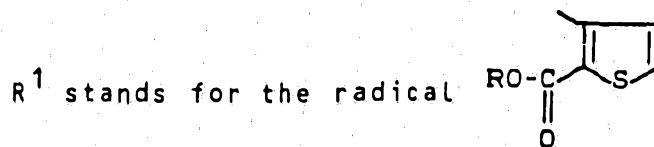
wherein

R^{15} stands for hydrogen,

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

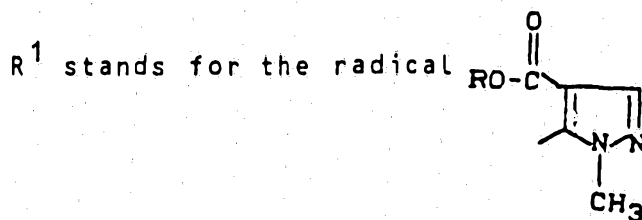
R^{17} stands for hydrogen;

in addition



wherein

R stands for C₁-C₂-alkyl, or



wherein

R stands for C₁-C₂-alkyl;

in addition

R^2 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, 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 -CH- grouping,~~

Y stands for nitrogen or a -CR⁴- grouping,

wherein

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(10) 603244

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

Z stands for ~~nitrogen~~ or 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 C₁-C₄-alkyl-ammonium equivalent,

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

AUSTRALIA

PATENTS ACT 1952

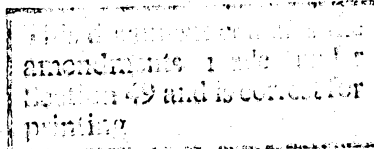
COMPLETE SPECIFICATION **603244**

(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 Riebel
- 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.
SULPHONYLAMINO GUANIDINOAZINES

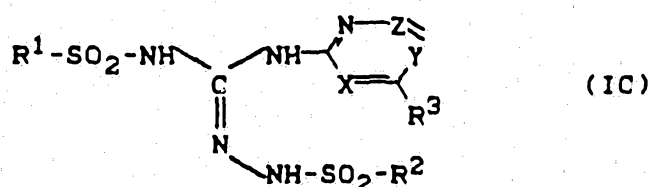
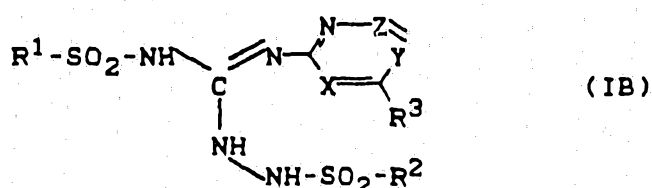
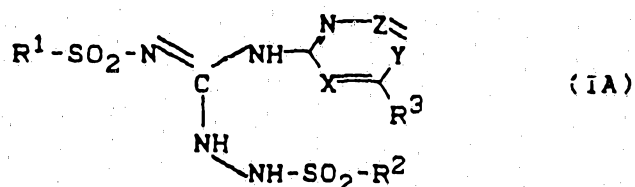
The following statement is a full description of this invention
including the best method of performing it known to me:-



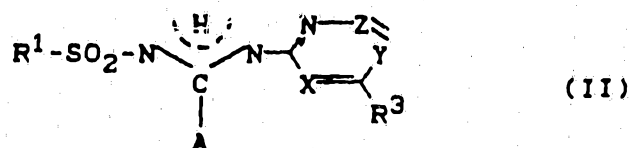
5

10.

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



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



in which

R^1 , R^3 , X, Y and Z have the abovementioned meanings and

A stands for one of the leaving groups given below

5 $R^6-SO_2-N-OR^7$ 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,

10 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)

15 $R^2 - SO_2 - NH - NH_2$ (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

20 customary methods.

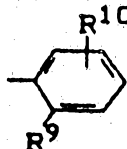
The new sulphonylaminoguanidinoazines of the general formula (I) are distinguished by strong herbicidal activity.

25 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

30 R^1 stands for the radical

wherein



R^9 and R^{10} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, iodine, cyano, nitro, ~~alkyl~~ α -alkyl [which is optionally substituted by fluorine, chlorine, bromine, cyano,

35

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carboxyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkyl-
amino-carbonyl, di-(C₁-C₄-alkyl)-amino-carbonyl,
hydroxyl, C₁-C₄-alkoxy, formyloxy, C₁-C₄-alkyl-
carbonyloxy, C₁-C₄-alkoxy-carbonyloxy, C₁-C₄-alkyl-
5 amino-carbonyloxy, 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 substitu-
10 ted by fluorine, chlorine, bromine, cyano, C₁-C₄-
alkoxycarbonyl, 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
15 optionally substituted by fluorine, chlorine, bro-
mine, 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 fluor-
20 ine, chlorine, bromine, cyano, carboxyl, C₁-C₄-
alkoxy-carbonyl, C₁-C₄-alkylthio, C₁-C₄-alkyl-
sulphinyl or C₁-C₄-alkylsulphonyl], for C₃-C₆-
alkenyloxy [which is optionally substituted by fluor-
ine, chlorine, bromine, cyano or C₁-C₄-alkoxy-
carbonyl], for C₂-C₆-alkenylthio [which is option-
25 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(O)_p-R¹¹,

wherein

p stands for the numbers 1 or 2 and
30 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-
35 (C₁-C₄-alkyl)-amino or for the radical -NHR¹²,

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wherein

5 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 -alkylsulphanyl, C_1 - C_4 -alkylsulphonyl, C_1 - C_4 -alkylcarbonyl, 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, 10 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 benzohydril or for phenyl [which is 15 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, 20 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 $-CO-R^{13}$,

wherein

25 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, C_1 - C_4 -alkoxy- C_1 - C_4 -alkyl-amino or di- $(C_1$ - C_4 -alkyl)-amino [which are optionally 30 substituted by fluorine and/or chlorine], R^9 and R^{10} furthermore stand for C_1 - C_4 -alkylsulphonyloxy, di- $(C_1$ - C_4 -alkyl)-aminosulphonylamino, thiazolyloxy or for the radical $-CH=N-R^{14}$,

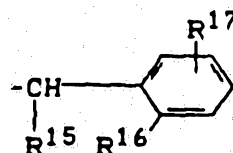
wherein

35 R^{14} stands for C_1 - C_6 -alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl,

C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulphanyl or C₁-C₄-alkylsulphonyl, for benzyl which is optionally substituted by fluorine or chlorine, for C₃-C₆-alkenyl or C₃-C₆-alkinyl 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 trifluoromethylthio, for C₁-C₆-alkoxy, C₃-C₆-alkenoxy, C₃-C₆-alkinoxy or benzyloxy 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-alkylsulphonylamino or for phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,

wherein in addition,

R¹ stands for the radical



wherein

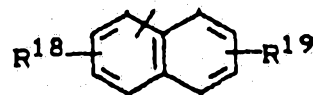
R¹⁵ stands for hydrogen or C₁-C₄-alkyl,

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;

wherein in addition

R¹ stands for the radical



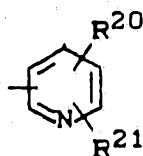
wherein

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

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

wherein in addition

R¹ stands for the radical

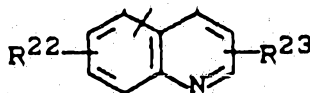


wherein

R²⁰ and R²¹ are identical or different and stand for hydrogen, fluorine, chlorine, bromine, nitro, cyano, C₁-C₄-alkyl [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine], for C₁-C₄-alkylthio, C₁-C₄-alkylsulphinyl 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;

wherein in addition

R¹ stands for the radical

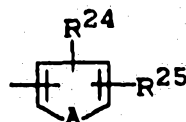


wherein

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 optionally substituted by fluorine and/or chlorine], for C₁-C₄-alkylthio, C₁-C₄-alkylsulphinyl or C₁-C₄-alkylsulphonyl [which are optionally substituted by fluorine and/or chlorine], or for di-(C₁-C₄-alkyl)-aminosulphonyl;

wherein in addition

R¹ stands for the radical



R²⁴ and R²⁵ are identical or different and stand for hydrogen, fluorine, chlorine, bromine, cyano, nitro, C₁-C₄-alkyl [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkylthio, C₁-C₄-alkylsulphinyl

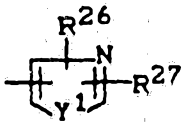
or C₁-C₄-alkylsulphonyl [which is optionally substituted by fluorine and/or chlorine], di-(C₁-C₄-alkyl)-amino-sulphonyl or C₁-C₄-alkoxy-carbonyl, and

5 A stands for oxygen, sulphur or the grouping N- Δ^1 ,

wherein

Δ^1 stands for hydrogen, C₁-C₄-alkyl [which is optionally substituted by fluorine, chlorine, bromine or cyano], C₃-C₆-cycloalkyl, benzyl, phenyl
10 [which is optionally substituted by fluorine, chlorine, bromine or nitro], C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxy-carbonyl or di-(C₁-C₄-alkyl)-aminocarbonyl;

wherein in addition

15 R¹ stands for the radical 

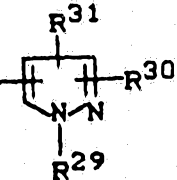
wherein

R²⁶ stands for hydrogen, C₁-C₅-alkyl or halogen,
R²⁷ stands for hydrogen or C₁-C₅-alkyl and
20 Y¹ stands for sulphur or the grouping N-R²⁸,

wherein

R²⁸ stands for hydrogen or C₁-C₅-alkyl,

wherein in addition

25 R¹ stands for the radical 

wherein

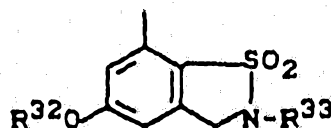
R²⁹ stands for hydrogen, C₁-C₄-alkyl or phenyl,
R³⁰ stands for hydrogen, halogen, cyano, nitro, C₁-C₄-alkyl [which is optionally substituted
30 by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine] or C₁-C₄-alkoxy-carbonyl and

R³¹ stands for hydrogen, halogen or C₁-C₄-alkyl,

wherein in addition,

35 R¹ stands for the radical

wherein



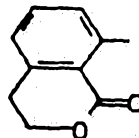
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R³² stands for C₁-C₃-alkyl and

R³³ stands for C₁-C₄-alkyl,

wherein in addition

R¹ stands for the radical



in which in addition

R² has the meaning given above as preferred for R¹, but does not have to be identical with R¹ in each individual case, and in addition can stand for di-(C₁-C₃-alkyl)-amino or for C₁-C₈-alkyl which is optionally substituted by halogen,

in which in addition

R³ stands for hydrogen, fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-halogenoalkyl, C₁-C₂-alkoxy-C₁-C₂-alkyl, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, C₁-C₄-alkylthio, C₁-C₄-halogenoalkylthio, amino, C₁-C₄-alkylamino, dimethylamino or diethylamino,

X stands for nitrogen or a -CH- grouping,

Y stands for nitrogen or a -CR⁴- grouping,

wherein

R⁴ stands for hydrogen, fluorine, chlorine, bromine, cyano, methyl, formyl, acetyl, methoxycarbonyl or ethoxycarbonyl and

Z stands for nitrogen or a -CR⁵- grouping,

wherein

R⁵ stands for hydrogen, fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylamino, dimethylamino or diethylamino, and

M stands for hydrogen or a sodium equivalent, a potassium equivalent or a calcium equivalent, an ammonium equivalent, a C₁-C₆-alkylammonium equivalent, a di-(C₁-C₄-alkyl)-ammonium or a tri-(C₁-C₄-alkyl)-ammonium equivalent,

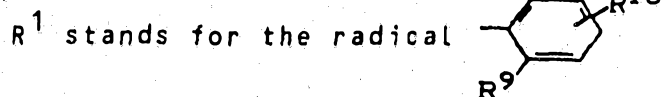
where N'-(4,6-dimethyl-pyrimidin-2-yl)-N''-(4-methyl-

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

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

5 in which



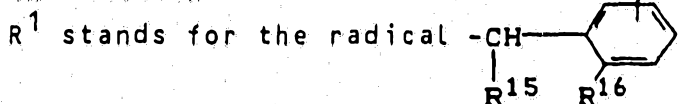
wherein

10 R^9 stands for fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy, C₁-C₃-alkylthio, C₁-C₃-alkylsulphinyl, C₁-C₃-alkylsulphonyl, dimethylaminosulphonyl, diethylaminosulphonyl, N-methoxy-N-methylaminosulphonyl, phenyl, phenoxy or C₁-C₃-alkoxycarbonyl

15 and

R^{10} stands for hydrogen;

wherein in addition



20 wherein

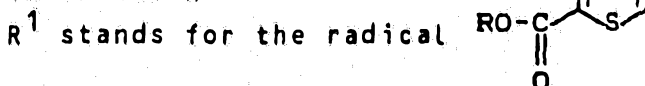
R^{15} stands for hydrogen,

R^{16} stands for fluorine, chlorine, bromine, methyl, methoxy, ethoxy, difluoromethoxy, trifluoromethoxy, methoxycarbonyl, ethoxycarbonyl, methylsulphonyl

25 or dimethylaminosulphonyl and

R^{17} stands for hydrogen;

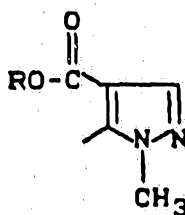
wherein in addition



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

5 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, difluoromethoxy, trifluoromethoxy, amino, acetamido, methoxycarbonyl and/or ethoxycarbonyl,

10 R³ stands for hydrogen, fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, ethoxy, difluoromethoxy, methylthio, ethylthio, amino, methylamino, ethylamino, dimethylamino or diethylamino,

15 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,

20 Z stands for nitrogen or a -CR⁵- grouping,

wherein

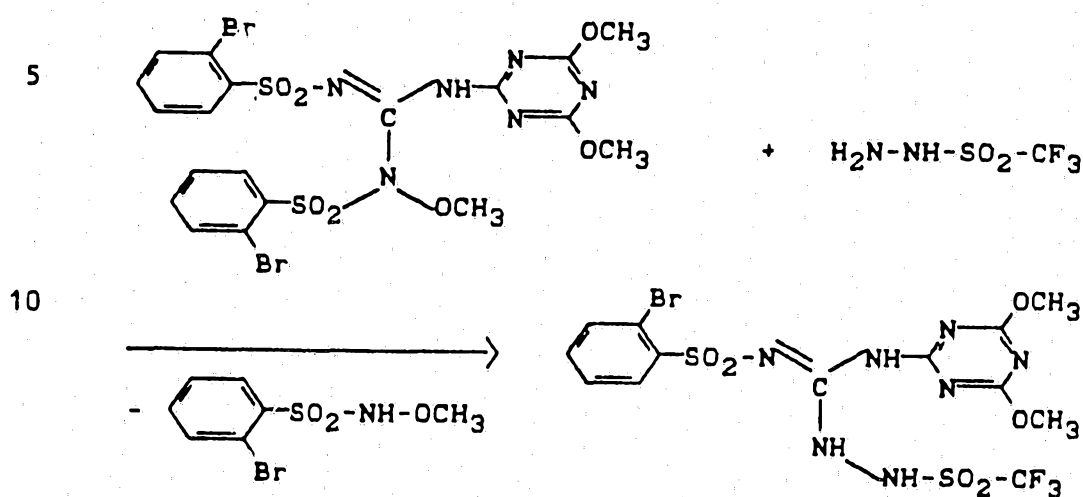
25 R⁵ stands for hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, propoxy, isopropoxy, difluoromethoxy, methylthio, ethylthio, methylamino, ethylamino, dimethylamino or diethylamino, and

30 M stands for hydrogen or a sodium equivalent, potassium equivalent or calcium equivalent, an ammonium equivalent or a C₁-C₄-alkyl-ammonium equivalent, where N'-(4,6-dimethyl-pyrimidin-2-yl)-N''-(4-methylphenylsulphonylamino)-N'''-(2-chloro-phenylsulphonyl)-guanidine is excluded.

35 If, for example, N'-(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:

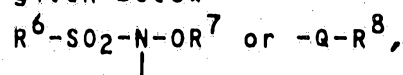


Formula (II) provides a general definition of the sulphonyl compounds to be used as starting materials in the process according to the invention. In the formula (II),

20 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

25 A preferably stands for one of the leaving groups given below



wherein

30 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 C_1 - C_4 -alkyl, C_3 - C_4 -alkenyl or benzyl,

R^8 stands for C_1 - C_4 -alkyl, benzyl or phenyl

35 and

Q stands for oxygen or sulphur.

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Table 1

A	R ¹	R ³	X	Y	Z
		CH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃

Table 1 - continuation

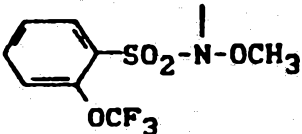
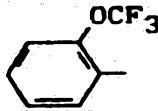
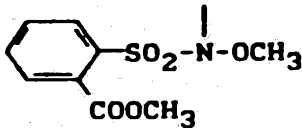
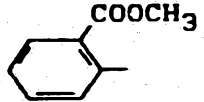
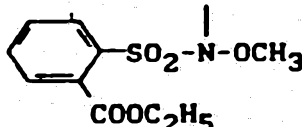
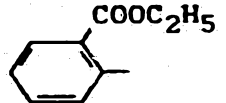
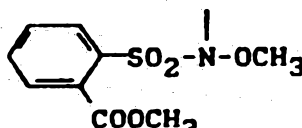
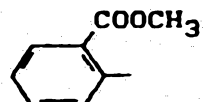
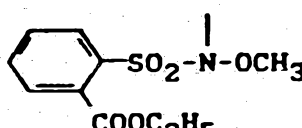
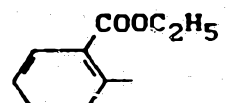
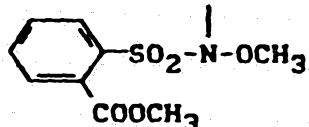
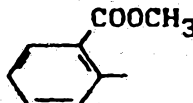
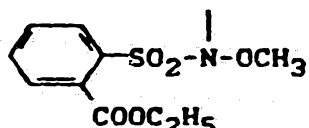
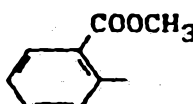
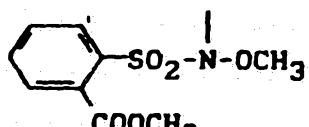
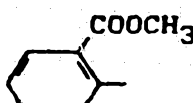
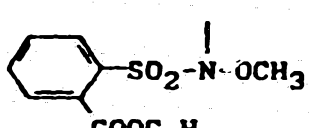
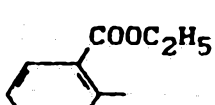
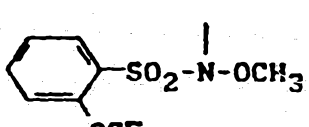
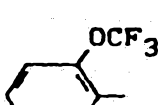
A	R ¹	R ³	X	Y	Z
		OCH ₃	N	CH	C-OCH ₃
		CH ₃	N	CH	C-CH ₃
		CH ₃	N	CH	C-CH ₃
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃

Table 1 - continuation

A	R ¹	R ³	X	Y	Z
		C ₂ H ₅	N	CH	C-OCH ₃
		C ₂ H ₅	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-Cl
		OCH ₃	N	CH	C-Cl
		OCH ₃	N	CH	C-Cl

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Table 1 - continuation

A	R ¹	R ³	X	Y	Z
		OCH ₃	N	CH	C-Cl
		H	N	CH	C-CH ₃
		CH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃
		CH ₃	N	CH	C-OCH ₃

Table 1 - continuation

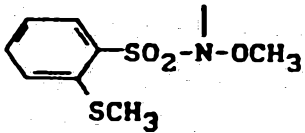
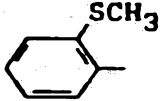
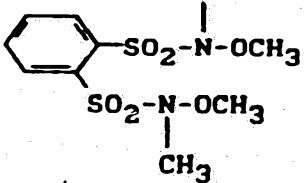
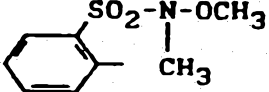
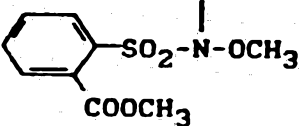
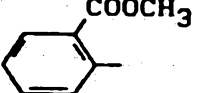
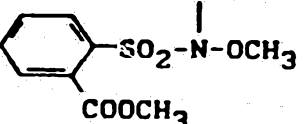
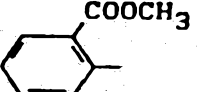
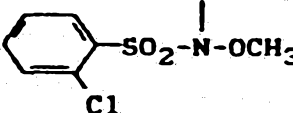
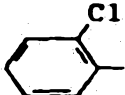
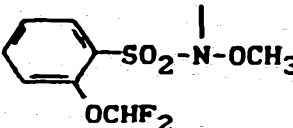
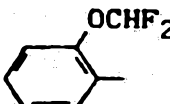
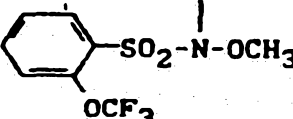
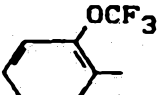
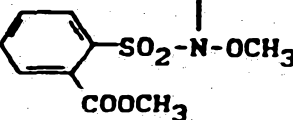
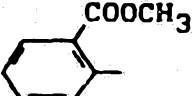
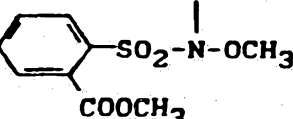
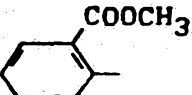
A	R ¹	R ³	X	Y	Z
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		OCH ₃	N	CH	C-OCH ₃
		CH ₃	N	CH	C-OC ₂ H ₅
		OCHF ₂	N	CH	C-CH ₃

Table 1 - continuation

A	R ¹	R ³	X	Y	Z
		CH ₃	N	CH	C-SCH ₃
		CH ₃	N	CH	C-N(CH ₃) ₂
		OCHF ₂	N	CH	C-OCHF ₂
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	N	C-OCH ₃

Table 1 - continuation

A	R ¹	R ³	X	Y	Z
		CH ₃	N	N	C-OCH ₃
		OCH ₃	N	N	C-OCH ₃
		OCH ₃	N	N	C-OCH ₃
		CH ₃	N	N	C-OCH ₃
		OCH ₃	N	N	C-OCH ₃

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Table 1 - continuation

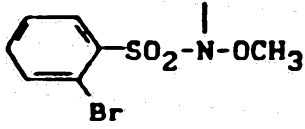
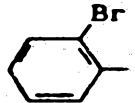
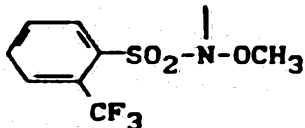
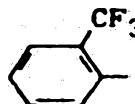
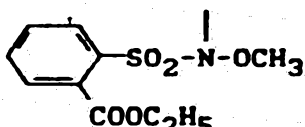
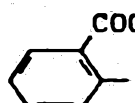
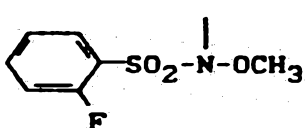
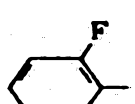
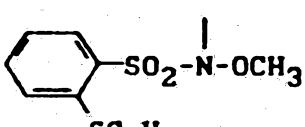
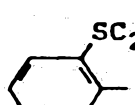
A	R ¹	R ³	X	Y	Z
		CH ₃	N	N	C-CH ₃
		CH ₃	N	N	C-Cl
		OCH ₃	N	N	C-OCH ₃
		OCH ₃	N	N	C-OCH ₃
		OCH ₃	N	N	C-OCH ₃

Table 1 - continuation

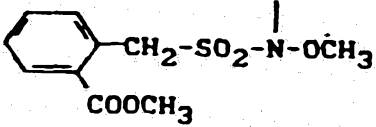
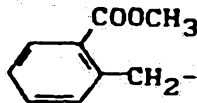
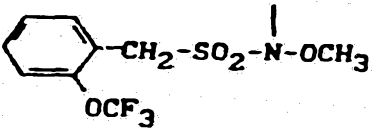
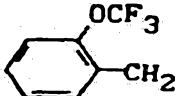
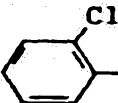
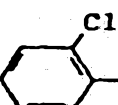
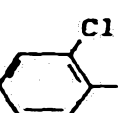
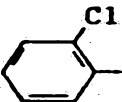
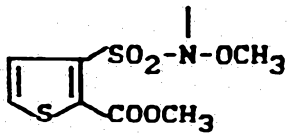
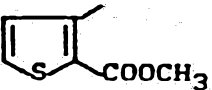
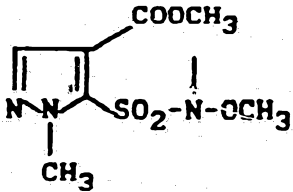
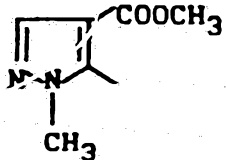
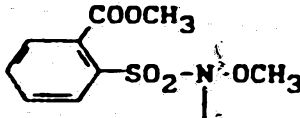
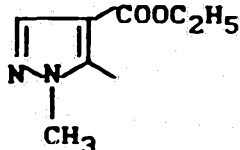
A	R ¹	R ³	X	Y	Z
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃
-OC ₆ H ₅		CH ₃	N	CH	C-CH ₃
-OCH ₃		CH ₃	N	CH	C-OCH ₃
-SCH ₃		OCH ₃	N	CH	C-OCH ₃

Table 1 - continuation

A	R ¹	R ³	X	Y	Z
-SC ₆ H ₅		OCH ₃	N	CH	C-OCH ₃
		CH ₃	N	N	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃
		OCH ₃	N	CH	C-OCH ₃

The starting materials of the formula (II) are known and/or can be prepared by processes which are known per se (compare EP-A 121,082, EP-A 172,957, EP-A 173,321, EP-A 173,956, EP-A 224,078, EP-A 5,986 and EP-A 24,215).

5 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
10 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:

15 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-,
20 3-chlorodifluoromethyl-, 2-methoxy-, 4-methoxy-, 2-ethoxy-, 4-ethoxy-, 2-difluoromethoxy-, 2-trifluoromethoxy-, 4-trifluoromethoxy-, 3-trifluoromethoxy-, 2-methoxycarbonyl-, 4-methoxycarbonyl-, 2-ethoxycarbonyl-, 4-ethoxycarbonyl-benzenesulphonyl hydrazide and dimethylsulphamoyl hydrazine.

25 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
30 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,
35 methyl acetate, ethyl acetate, acetonitrile, propionitrile, dimethylformamide, dimethylacetamide, N-methylpyrrolidone,
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dimethyl sulphoxide 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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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, 5 Convolvulus, Ipomoea, Polygonum, Sesbania, Ambrosia, Cirsium, Carduus, Sonchus, Solanum, Rorippa, Rotala, Lindernia, Lamium, Veronica, Abutilon, Emex, Datura, Viola, Galeopsis, Papaver and Centaurea.

10 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, 15 Panicum, Digitaria, Phleum, Poa, Festuca, Eleusine, Brachiaria, Lolium, Bromus, Avena, Cyperus, Sorghum, Agropyron, Cynodon, Monochoria, Fimbristylis, Sagittaria, Eleocharis, Scirpus, Paspalum, Ischaemum, Sphenoclea, Dactyloctenium, Agrostis, Alopecurus and Apera.

20 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 25 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 30 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 35 plantations, rubber plantations, oil palm plantations, cocoa plantations, soft fruit plantings and hopfields,

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and for the selective combating of weeds in annual cultures.

5 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, defoliant action and activity against rice diseases, such as *Pyricularia oryzae*, was also observed.

10 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
15 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
20 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
25 in the main: aromatics, such as xylene, toluene or alkyl naphthalenes, chlorinated aromatics and chlorinated aliphatic hydrocarbons, such as chlorobenzenes, chloroethylenes or methylene chloride, aliphatic hydrocarbons, such as cyclohexane or paraffins, for example petroleum fractions, mineral and vegetable oils, alcohols, such as
30 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 sulphoxide, as well
35 as water.

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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 hydrolysis 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,
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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.

- 5 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-
10 5(4H)-one for combating weeds in sugar beet, and 4-amino-6-(1,1-dimethylethyl)-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-
15 [[[[[(4,6-dimethoxypyrimidin-2-yl)-amino]-carbonyl]-amino]-sulphonyl]-methyl]-benzoate; 3-isopropyl-2,1,3-benzothiadiazin-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-diethylphenyl)-acetamide;
20 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-
25 1,2,4-triazin-5(4H)-one; 2-[4-[(6-chloro-2-benzoxazolyl)-oxy]-phenoxy]-propanoic acid, its methyl or its ethyl ester; trimethylsilylmethyl 2-[4-(3,5-dichloropyrid-2-yl-oxy)-phenoxy]-propionate; 2-(4,5-dihydro-4-methyl-4-isopropyl-5-oxo-1H-imidazol-2-yl)-pyridine-3-carboxylic acid;
30 3,5-diiodo-4-hydroxybenzonitrile; N,N-dimethyl-N'-(4-isopropylphenyl)-urea; (2-methyl-4-chlorophenoxy)-acetic acid; (4-chloro-2-methylphenoxy)-propionic acid; 2-[[[(4-methoxy-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-
35 nitrobenzenesulphonamide; N-(1-ethylpropyl)-3,4-dimethyl-

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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-diisopropyl-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, nematocides, 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.

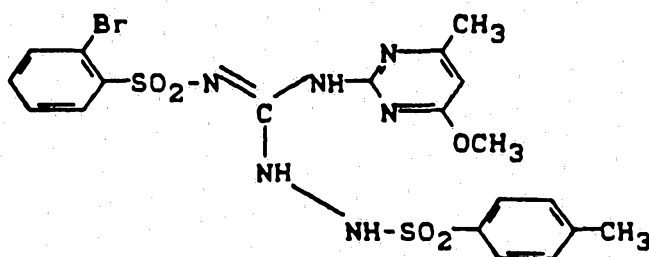
The preparation and use of the active compounds according to the invention can be seen from the following examples.

35

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Preparation Examples

Example 1

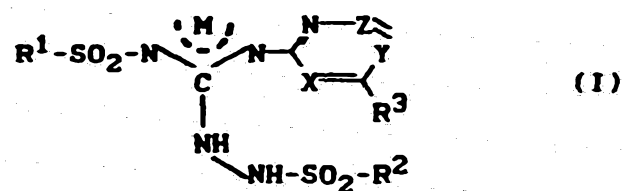


5 A mixture of 6.5 g (0.01 mol) of N'-(4-methoxy-6-methyl-pyrimidin-2-yl)-N''-methoxy-N''',N'''-bis-(2-bromo-phenylsulphonyl)-guanidine, 5.6 g (0.03 mol) of p-toluene-sulphonyl hydrazide, 30 ml of ethanol and 10 ml of water is heated to boiling under reflux for 60 minutes and then stirred for 20 hours at 20°C. The precipitated crystal-
10 line 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-phenylsulphonylamino)-N'''-(2-bromo-phenylsulphonyl)-guanidine of melting point 156°C are obtained.

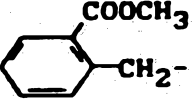
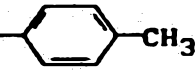
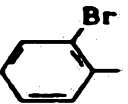
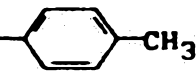
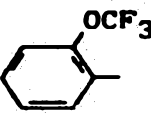
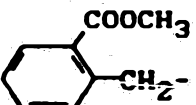
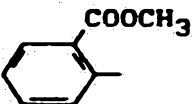
15 The compounds of the formula (I) shown in Table 2 below can be prepared analogously to Example 1 and corresponding to the general description of the process according to the invention.

Le A 25 398 Table 2: Examples of compounds of the formula (I)



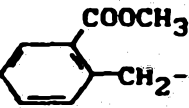
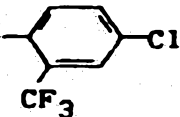
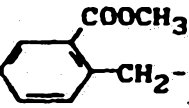
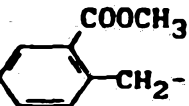
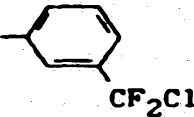
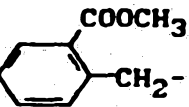
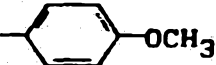
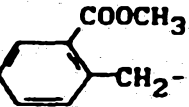
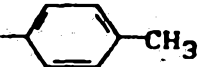
Ex- ample No.	H	R¹	R²	R³	X	Y	Z	Melting point (°C)
2	H			CH₃	N	CH	C-CH₃	153
3	H			OCH₃	N	CH	C-OCH₃	163
4	H			OCH₃	N	CH	C-OCH₃	110
5	H			OCH₃	N	CH	C-OCH₃	174
6	H			OCH₃	N	CH	C-OCH₃	177

Table 2 - continuation

Ex- ample No.	H	R ¹	R ²	R ³	X	Y	Z	Melting point (°C)
7	H			OCH ₃	N	CH	C-OCH ₃	166
8	H			OCH ₃	N	CH	C-OCH ₃	102
9	H		CH ₃	OCH ₃	N	CH	C-OCH ₃	174
10	H		CH ₃	OCH ₃	N	CH	C-OCH ₃	87
11	H		CH ₃	OCH ₃	N	CH	C-OCH ₃	184

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Table 2 - continuation

Ex- ample No.	M	R ¹	R ²	R ³	X	Y	Z	Melting point (°C)
12	H			OCH ₃	N	CH	C-OCH ₃	113
13	H		C ₃ H ₇	OCH ₃	N	CH	C-OCH ₃	155
14	H			OCH ₃	N	CH	C-OCH ₃	147
15	H			OCH ₃	N	CH	C-OCH ₃	151
16	Na			OCH ₃	N	CH	C-OCH ₃	

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Table 2 - continuation

Ex-
ample
No.

M

R¹

R²

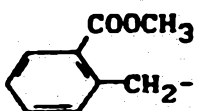
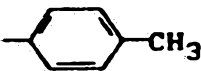
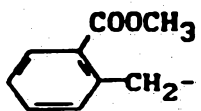
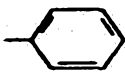
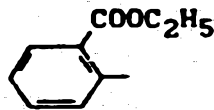
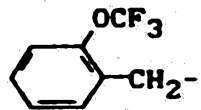
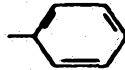
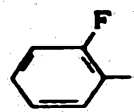
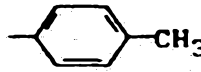
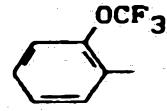
R³

X

Y

Z

Melting
point (°C)

17	K			OCH ₃	N	CH	C-OCH ₃	
18	H			OCH ₃	N	CH	C-OCH ₃	
19	H			OCH ₃	N	CH	C-OCH ₃	
20	H			OCH ₃	N	CH	C-OCH ₃	
21	H			CH ₃	N	CH	C-OCH ₃	154
22	H			CH ₃	N	CH	C-OCH ₃	179

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Table 2 - continuation

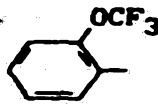
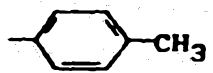
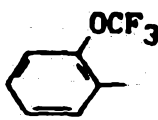
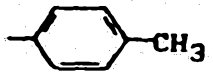
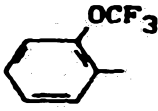
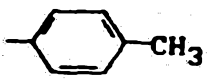
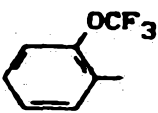
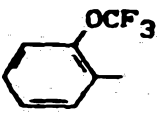
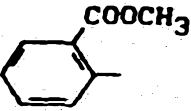
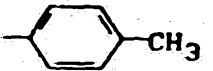
Ex- ample No.	M	R ¹	R ²	R ³	X	Y	Z	Melting point (°C)
23	H ₃ NCH(CH ₃) ₂			CH ₃	N	CH	C-OCH ₃	84
24	K			CH ₃	N	CH	C-OCH ₃	127
25	H			CH ₃	N	CH	C-OC ₂ H ₅	155
26	H		CH ₃	CH ₃	N	CH	C-OCH ₃	178
27	H			CH ₃	N	CH	C-OCH ₃	182
28	H			CH ₃	N	CH	C-OC ₂ H ₅	

Table 2 - continuation

Ex-
ample
No.

H

R¹R²R³

X

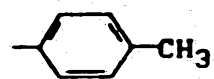
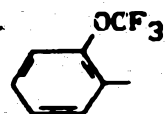
Y

Z

Melting
point (°C)

29

H

C₂H₅

N

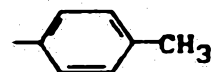
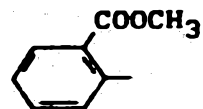
CH

C-OCH₃

173

30

H

CH₃

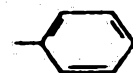
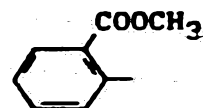
N

CH

C-OCH₃

31

H

CH₃

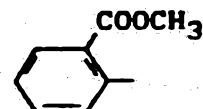
N

CH

C-OCH₃

32

H

CH₃CH₃

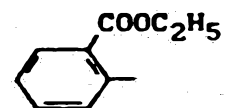
N

CH

C-OCH₃

33

H

CH₃CH₃

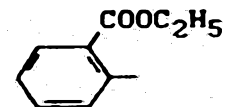
N

CH

C-OCH₃

34

H

CH₃

N

CH

C-OCH₃

Table 2 - continuation

Ex-
ample
No.

Melting
point ($^{\circ}\text{C}$)

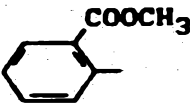
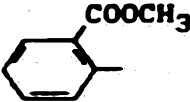
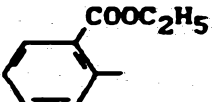
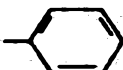
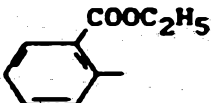
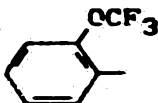
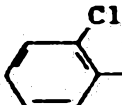
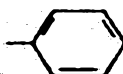
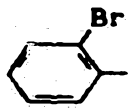
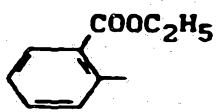
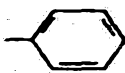
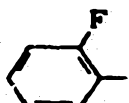
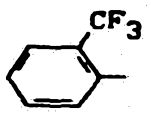
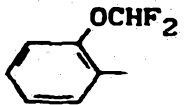
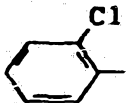
	M	R ¹	R ²	R ³	X	Y	Z	
35	H			CH ₃	N	N	C-OCH ₃	183
36	H		CH ₃	CH ₃	N	N	C-OCH ₃	
37	H			OCH ₃	N	N	C-OCH ₃	
38	H		CH ₃	OCH ₃	N	N	C-OCH ₃	
39	H		CH ₃	OCH ₃	N	N	C-OCH ₃	
40	H			OCH ₃	N	N	C-OCH ₃	

Table 2 - continuation

Ex-
ample
No.

Melting
point ($^{\circ}\text{C}$)

	M	R ¹	R ²	R ³	X	Y	Z
41	H		CH ₃	OCH ₃	N	N	C-OCH ₃
42	H			CH ₃	N	N	C-CH ₃
43	H		CH ₃	OCH ₃	N	N	C-OCH ₃
44	H			OCH ₃	N	N	C-OCH ₃
45	H		CH ₃	OCH ₃	N	N	C-OCH ₃
46	H			CH ₃	N	N	C-OCH ₃

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Ex-
ample
No.

Meiting
point (°C)

	M	R ¹	R ²	R ³	X	Y	Z	
47	H			CH ₃	N	N	C-OCH ₃	
48	H			OCH ₃	N	N	C-OCH ₃	
49	H			C ₂ H ₅	N	N	C-OCH ₃	
50	H			CH ₃	N	N	C-OC ₂ H ₅	
51	H			OCH ₃	N	CH	C-OCH ₃	223

Table 2 - continuation

Ex-
ample
No.Melting
point (°C)

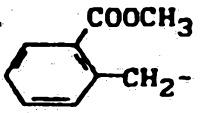
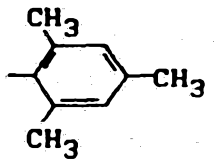
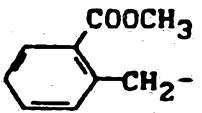
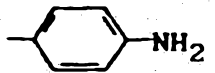
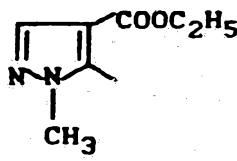
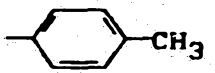
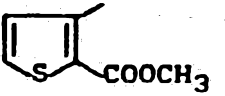
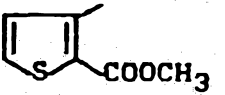
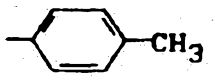
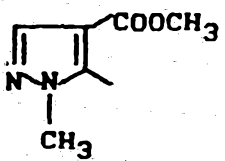
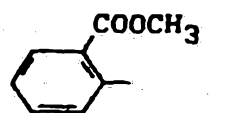
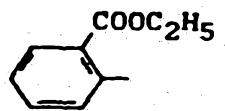
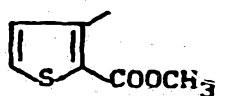
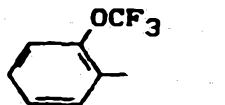
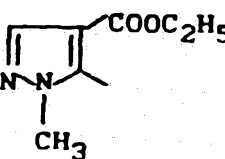
	H	R ¹	R ²	R ³	X	Y	Z	
52	H			OCH ₃	N	CH	C-OCH ₃	100
53	H			OCH ₃	N	CH	C-OCH ₃	218
54	H			OCH ₃	N	CH	C-OCH ₃	112
55	H			CH ₃	N	N	C-OCH ₃	
56	H			OCH ₃	N	N	C-OCH ₃	

Table 2 - continuation

Ex-
ample
No.

Melting
point (°C)

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	M	R ¹	R ²	R ³	X	Y	Z
57	H			OCH ₃	N	N	C-OCH ₃
58	H			CH ₃	N	CH	C-CH ₃
59	H			CH ₃	N	CH	C-CH ₃
60	H			OCH ₃	N	CH	C-OCH ₃
61	H			CH ₃	N	CH	C-CH ₃
62	H			OCH ₃	N	CH	C-OCH ₃

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Table 2 - continuation

Ex-
ample
No.

Melting
point (°C)

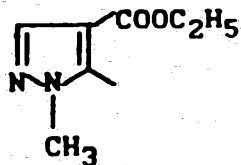
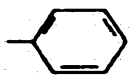
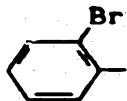
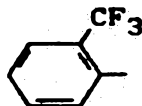
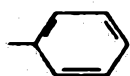
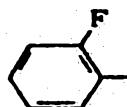
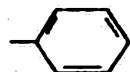
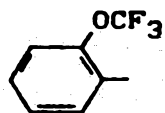
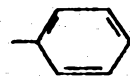
	M	R ¹	R ²	R ³	X	Y	Z
63	H			OCH ₃	N	N	C-OCH ₃
64	H			OCH ₃	N	N	C-OCH ₃
65	H			CH ₃	N	CH	C-CH ₃
66	H			CH ₃	N	CH	C-CH ₃
67	H			CH ₃	N	CH	C-CH ₃

Table 2 - continuation

Ex-
ample
No.Melting
point (°C)

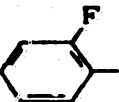
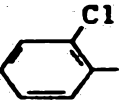
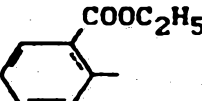
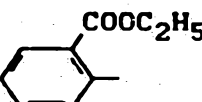
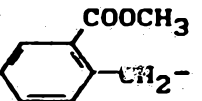
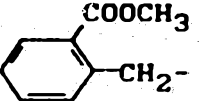
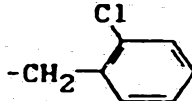
	H	R ¹	R ²	R ³	X	Y	Z	
68	H			OCH ₃	N	CH	C-OCH ₃	
69	H			OCH ₃	N	CH	C-OCH ₃	
70	H			OCH ₃	N	CH	C-Cl	
71	H		-C ₃ H ₇ -n	OCH ₃	N	CH	C-Cl	
72	H		N(CH ₃) ₂	OCH ₃	N	CH	C-OCH ₃	158
73	H			OCH ₃	N	CH	C-OCH ₃	

Table 2 - continuation

Ex-
ample
No.Melting
point (°C)

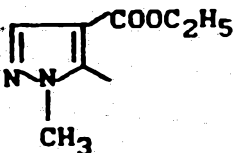
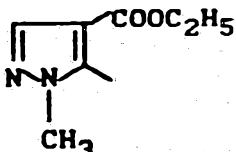
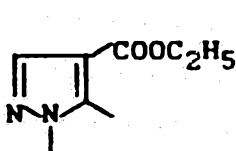
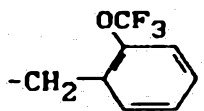
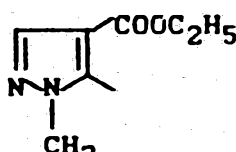
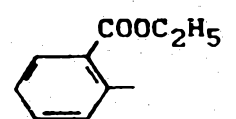
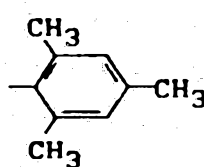
	M	R ¹	R ²	R ³	X	Y	Z
74	H		CH ₃	OCH ₃	N	CH	C-OCH ₃
75	H		-C ₃ H ₇ -n	OCH ₃	N	CH	C-OCH ₃
76	H			OCH ₃	N	CH	C-OCH ₃
77	H		N(CH ₃) ₂	OCH ₃	N	CH	C-OCH ₃
78	H			OCH ₃	N	CH	C-Cl

Table 2 - continuation

Ex-
ample
No.Melting
point (°C)

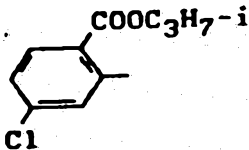
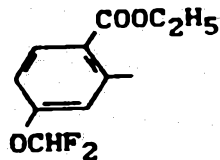
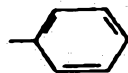
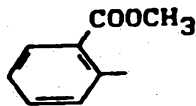
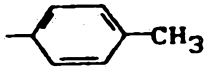
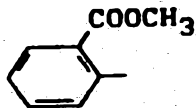
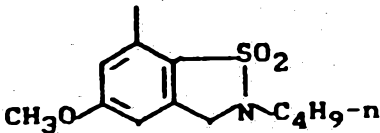
	M	R ¹	R ²	R ³	X	Y	Z
79	H			CH ₃	N	N	C-OCH ₃
80	H			OCH ₃	N	CH	C-OCH ₃
81	H			OCHF ₂	N	CH	C-OCHF ₂
82	H			OCH ₃	N	CH	CH(OCH ₃) ₂
83	H			OCH ₃	N	CH	C-OCH ₃

Table 2 - continuation

Ex-
ample
No.Melting
point (°C)

	M	R ¹	R ²	R ³	X	Y	Z
84	H			OCH ₃	N	CH	C-OCH ₃
85	H			OCH ₃	N	N	C-OCH ₃
86	H			OCH ₃	N	CH	C-OCH ₃
87	H		-C ₃ H ₇ -n	OCH ₃	N	CH	C-OCH ₃
88	H			OCH ₃	N	CH	C-OCH ₃

Table 2 - continuation

Ex-
ample
No.Melting
point ($^{\circ}\text{C}$)

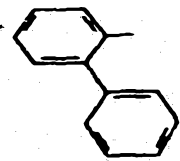
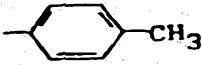
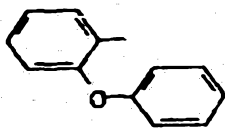
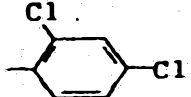
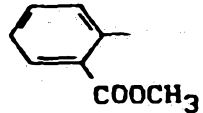
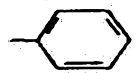
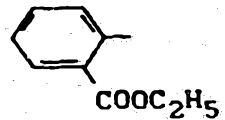
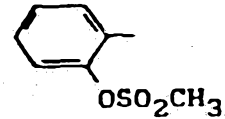
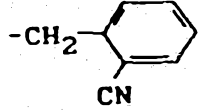
	M	R ¹	R ²	R ³	X	Y	Z
89	H			OCH ₃	N	N	C-OCH ₃
90	H			OCH ₃	N	N	C-OCH ₃
91	H			NHCH ₃	N	N	C-OC ₂ H ₅
92	H		CH ₃	NHCH ₃	N	N	C-OC ₂ H ₅
93	H			NHCH ₃	N	N	C-C ₂ H ₅

Table 2 - continuation

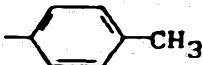
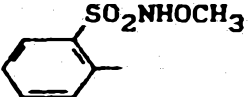
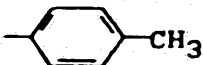
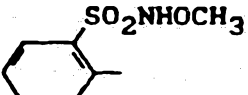
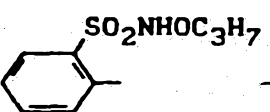
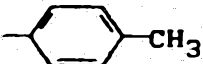
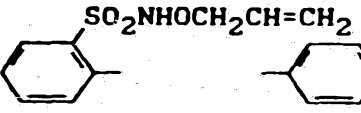
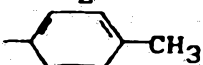
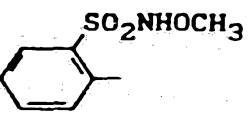
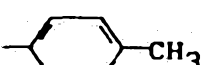
Ex-ample No.	M	R ¹	R ²	R ³	X	Y	Z	Melting point (°C)
94	H			NHCH ₃	N	N	C-OC ₂ H ₅	
95	H			OCH ₃	N	CH	C-OCH ₃	164
96	H			CH ₃	N	CH	C-OCH ₃	202
97	H			CH ₃	N	CH	C-OCH ₃	181
98	H			CH ₃	N	CH	C-OCH ₃	148
99	H			CH ₃	N	CH	C-OC ₂ H ₅	106

Table 2 - continuation

Ex-
ample
No.

H

R¹R²R³

X

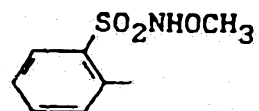
Y

Z

Melting
point (°C)

100

H

CH₃OCH₃

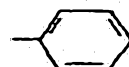
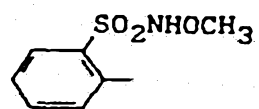
N

CH

C-OCH₃

101

H

OCH₃

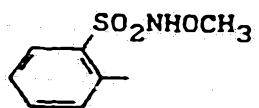
N

CH

C-OCH₃

102

H

OCH₃

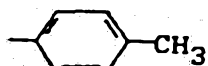
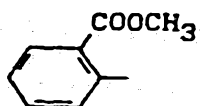
N

CH

C-Cl

103

H

CF₃

N

CH

C-OCH₃

63

Ex-
ample
No.

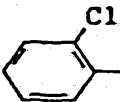
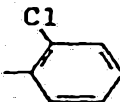
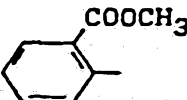
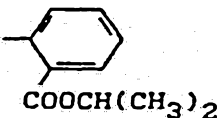
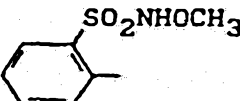
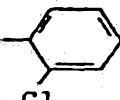
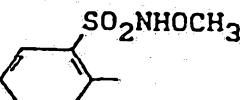
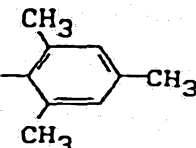
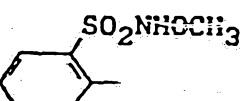
Melting
point ($^{\circ}\text{C}$)

	M	R ¹	R ²	R ³	X	Y	Z	
104	H			CH ₃	N	CH	C-CH ₃	157
105	H			OCH ₃	N	CH	C-OCH ₃	211
106	H			OCH ₃	N	CH	C-OCH ₃	147
107	H			OCH ₃	N	CH	C-OCH ₃	
108	H			OCH ₃	N	CH	C-OCH ₃	160

Table 2 - continuation

Ex-
ample
No.

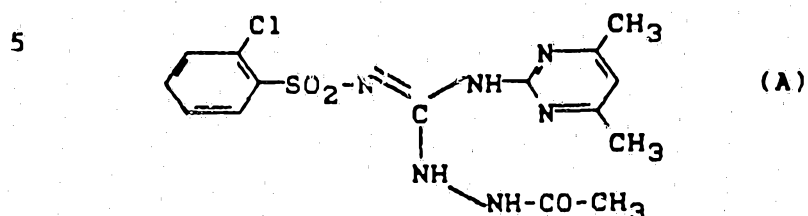
Melting
point (°C)

	M	R ¹	R ²	R ³	X	Y	Z	
109	H			CH ₃	N	CH	C-OCH ₃	168
110	H			CH ₃	N	CH	C-CH ₃	159
111	H			OCH ₃	N	N	C-OCH ₃	188
112	H			OCH ₃	N	N	C-OCH ₃	176
113	H			OCH ₃	N	N	C-OCH ₃	198

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Use examples

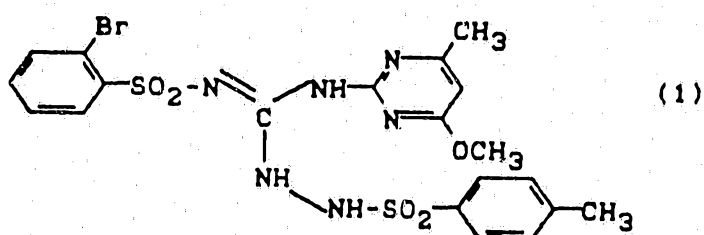
The compound shown below is used as the comparison substance in the following use examples:



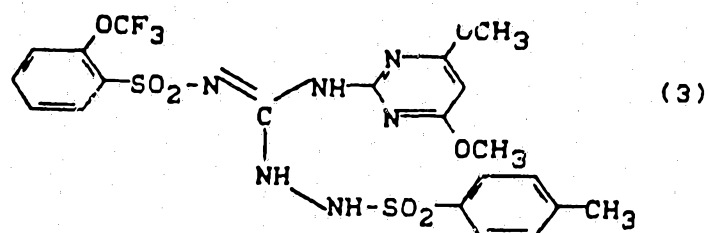
10

N'-(4,6-Dimethyl-pyrimidin-2-yl)-N''-acetamido-N'''-(2-chloro-phenylsulphonyl)-guanidine
(known from EP-A 121,082).

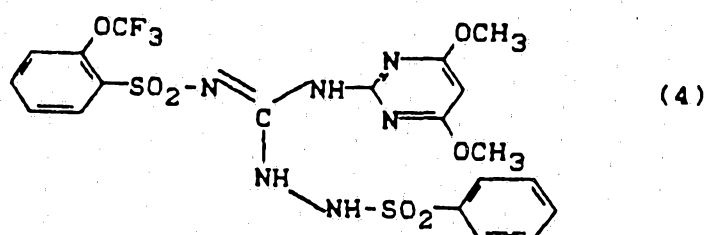
15 The formulae of the compounds according to the invention used for the use examples are - with the numbering of the preparation examples ("Example No.") - shown individually below.



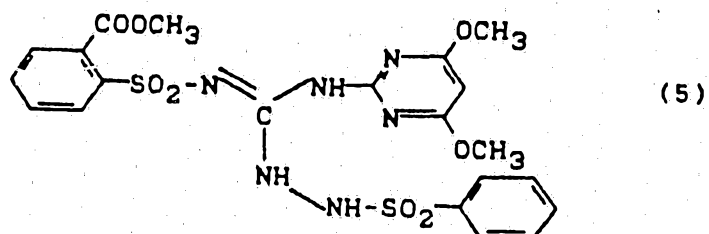
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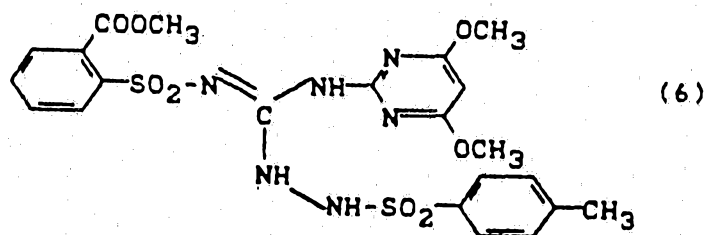
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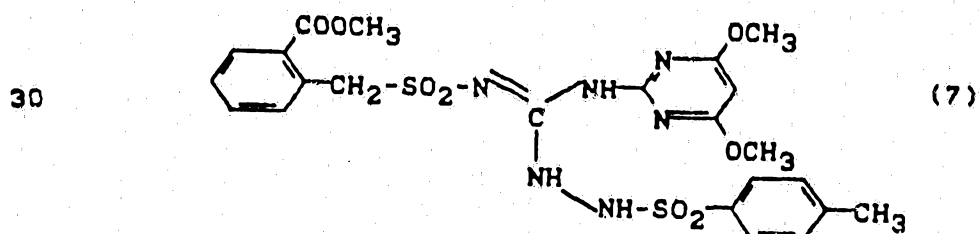
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20



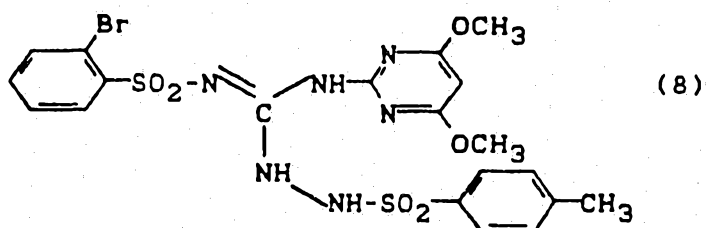
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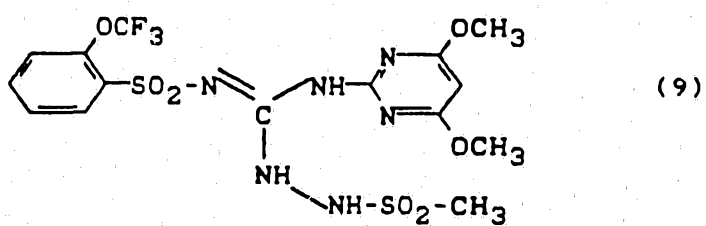
30

35

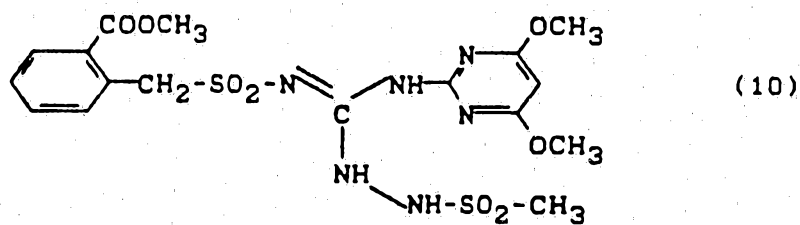
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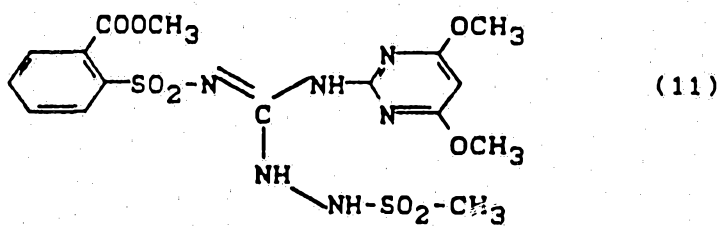
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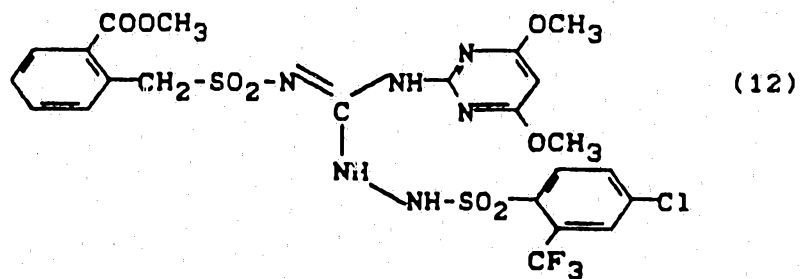
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20

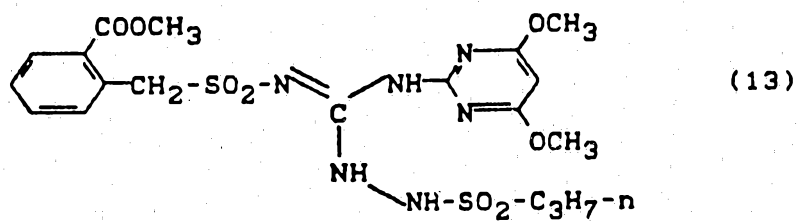


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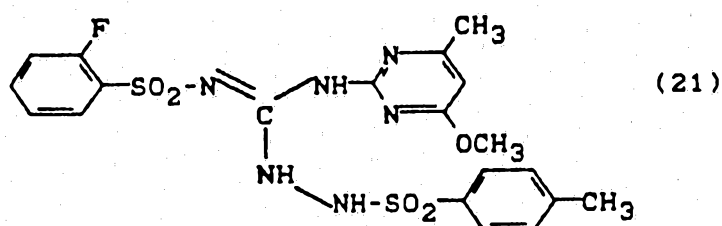


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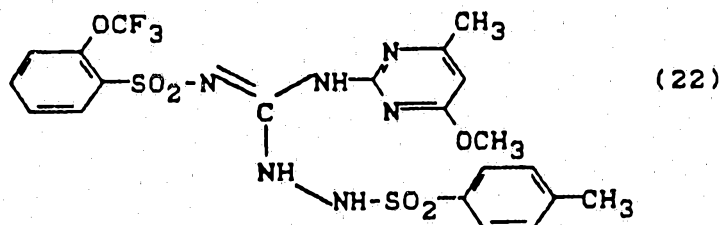
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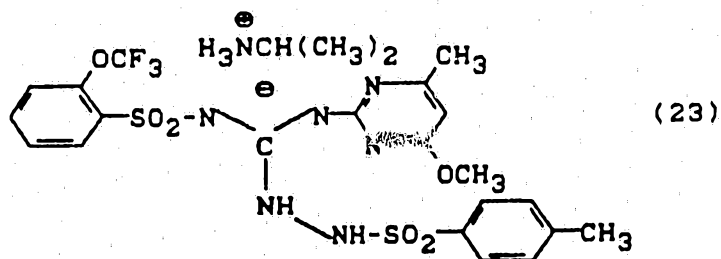
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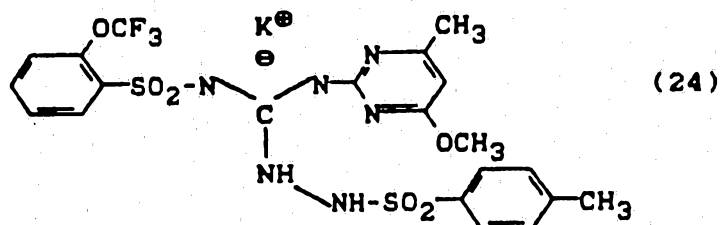
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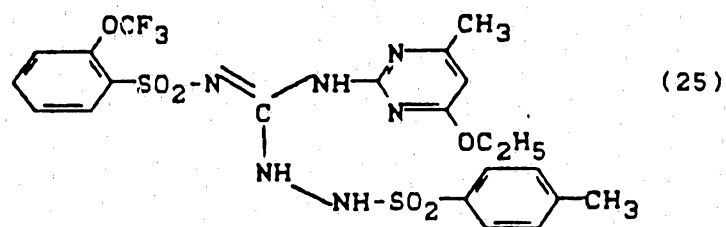


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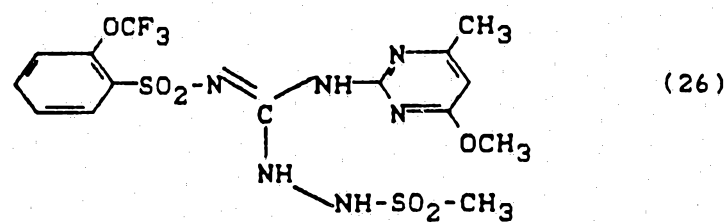


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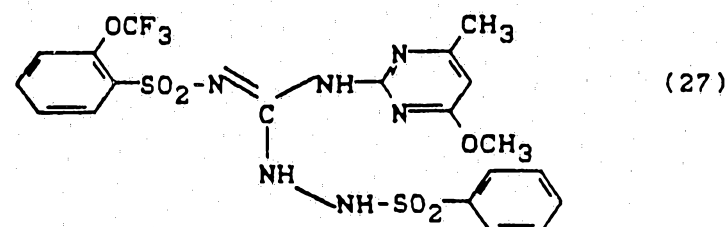
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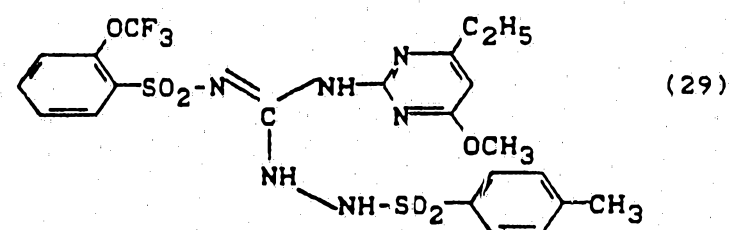
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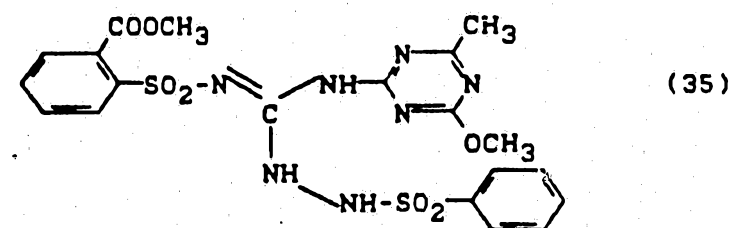
15



20



25



30

Example A

Pre-emergence test

Solvent: 5 parts by weight of acetone

Emulsifier: 1 part by weight of alkylaryl polyglycol ether

5 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.

10 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,
15 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:

20 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), (11), (21), (22), (23), (24), (25), (26), (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

5 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.

10 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
15 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)

20 100% = 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

5 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.

10 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
15 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
20 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.

25 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.

30 The figures note:

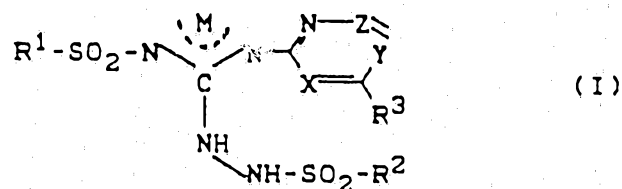
0 % = no action (like the untreated control)

100 % = total destruction

In this test, the good tolerability of the active compounds according to the invention - in particular of
35 compounds (7) and (10) - in rice along with, at the same time, a very good weed action is apparent, whereas the very similar
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previously known compound (A) causes severe damage to the rice.

1. Sulphonylaminoguanidinoazines of the general formula (I)



R¹ stands for the radical 

R⁹ and R¹⁰ 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-alkoxycarbonyl, C₁-C₄-alkyl-aminocarbonyl, di-(C₁-C₄-alkyl)-amino-carbonyl, hydroxyl, C₁-C₄-alkoxy, formyloxy, C₁-C₄-alkyl-carbonyloxy, C₁-C₄-alkoxy-carbonyloxy, C₁-C₄-alkyl-amino-carbonyloxy, 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-alkoxy-carbonyl, 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 fluorine, chlorine, bromine, cyano, carboxyl, C₁-C₄-



alkoxy-carbonyl, C₁-C₄-alkylthio, C₁-C₄-alkylsulphanyl or C₁-C₄-alkylsulphonyl], for C₃-C₆-alkenyloxy [which is optionally substituted by fluorine, chlorine, bromine, cyano or C₁-C₄-alkoxy-carbonyl], for C₂-C₆-alkenylthio [which is optionally 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 $-S(O)_p-R^{11}$,

wherein

p stands for the numbers 1 or 2 and

R^{11} 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 $-NHR^{12}$,

wherein

R^{12} stands for C₁-C₁₂-alkyl [which is optionally substituted by fluorine, chlorine, cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulphinyl, C₁-C₄-alkylsulphonyl, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxy-carbonyl, C₁-C₄-alkylamino-carbonyl or di-(C₁-C₄-alkyl)-amino-carbonyl], for C₃-C₆-alkenyl [which is optionally substituted by fluorine, chlorine or bromine], C₃-C₆-alkinyl, C₃-C₆-cycloalkyl, C₃-C₆-cycloalkyl-C₁-C₂-alkyl, phenyl-C₁-C₂-alkyl [which is optionally substituted by fluorine, chlorine, nitro, cyano, C₁-C₄-alkyl, C₁-C₄-alkoxy or C₁-C₄-alkoxy-carbonyl], for benzylhydryl or for phenyl [which is optionally substituted by fluorine, chlorine, nitro, cyano, C₁-C₄-alkyl, trifluoromethyl, C₁-C₄-alkoxy, C₁-C₂-fluoroalkoxy, C₁-C₄-alkylthio, trifluoromethylthio or C₁-C₄-alkoxy-carbonyl], R^9 and R^{10} furthermore stand for phenyl or phenoxy, for amino, C₁-C₄-alkylcarbonylamino, C₁-C₄-alkoxy-carbonylamino, C₁-C₄-alkylamino-carbonylamino, di-(C₁-C₄-alkyl)-amino-carbonylamino, or for the radical $-CO-R^{13}$,

wherein

R^{13} stands for C₁-C₆-alkyl, C₁-C₆-alkoxy, C₃-C₆-cycloalkoxy, C₃-C₆-alkenyloxy, C₁-C₄-alkylthio, C₁-C₄-alkylamino, C₁-C₄-alkoxy-

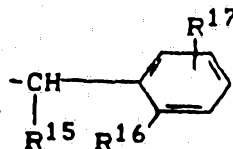
amino, C₁-C₄-alkoxy-C₁-C₄-alkylamino or di-(C₁-C₄-alkyl)-amino [which are optionally substituted by fluorine and/or chlorine], R⁹ and R¹⁰ furthermore stand for C₁-C₄-alkylsulphonyloxy, di-(C₁-C₄-alkyl)-aminosulphonylamino, thiazolyloxy or for the radical -CH=N-R¹⁴,

wherein

R¹⁴ stands for C₁-C₆-alkyl which is optionally substituted by fluorine, chlorine, cyano, carboxyl, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylsulphinyl or C₁-C₄-alkylsulphonyl, for benzyl which is optionally substituted by fluorine or chlorine, for C₃-C₆-alkenyl or C₃-C₆-alkinyl 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 trifluoromethylthio, for C₁-C₆-alkoxy, C₃-C₆-alkenoxy, C₃-C₆-alkinoxy or benzyloxy 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-alkylsulphonylamino or for phenylsulphonylamino which is optionally substituted by fluorine, chlorine, bromine or methyl,

in addition,

R¹ stands for the radical

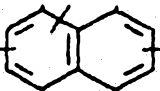


wherein

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;

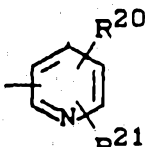
in addition

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 substituted by fluorine and/or chlorine] or C₁-C₄alkoxy [which is optionally substituted by fluorine and/or chlorine];

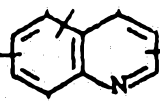
in addition

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 substituted by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine], for C₁-C₄-alkylthio, C₁-C₄-alkylsulphanyl 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;

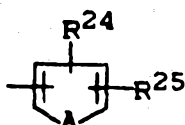
in addition

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 optionally substituted by fluorine and/or chlorine], for C₁-C₄-alkylthio, C₁-C₄-alkylsulphanyl or C₁-C₄-alkylsulphonyl [which are optionally substituted by fluorine and/or chlorine], or for di-(C₁-C₄-alkyl)-aminosulphonyl;

in addition

R^1 stands for the radical 

wherein

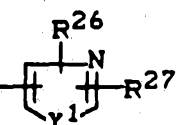
R^{24} and R^{25} are identical or different and stand for hydrogen, fluorine, chlorine, bromine, cyano, nitro, C₁-C₄-alkyl [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkylthio, C₁-C₄-alkylsulphenyl or C₁-C₄-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-Z¹,

wherein

Z¹ stands for hydrogen, C₁-C₄-alkyl [which is optionally substituted by fluorine, chlorine, bromine or cyano], C₃-C₆-cycloalkyl, benzyl, phenyl [which is optionally substituted by fluorine, chlorine, bromine or nitro], C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxy-carbonyl or di-(C₁-C₄-alkyl)-aminocarbonyl;

in addition

R^1 stands for the radical 

wherein

R^{26} stands for hydrogen, C₁-C₅-alkyl or halogen,

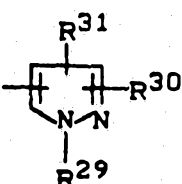
R^{27} stands for hydrogen or C₁-C₅-alkyl and

Y^1 stands for sulphur or the grouping N-R²⁸,

wherein

R^{28} stands for hydrogen or C₁-C₅-alkyl,

in addition

R^1 stands for the radical 

wherein

R^{29} stands for hydrogen, C₁-C₄-alkyl or phenyl,

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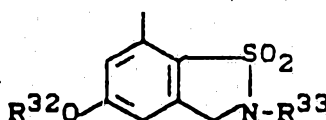
R^{30} stands for hydrogen, halogen, cyano, nitro, C₁-C₄-alkyl [which is optionally substituted by fluorine and/or chlorine], C₁-C₄-alkoxy [which is optionally substituted by fluorine and/or chlorine] or C₁-C₄-alkoxy-carbonyl and

R^{31} stands for hydrogen, halogen or C₁-C₄-alkyl,

in addition,

R^1 stands for the radical

wherein

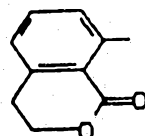


R^{32} stands for C₁-C₃-alkyl and

R^{33} stands for C₁-C₄-alkyl,

in addition

R^1 stands for the radical



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-(C₁-C₃-alkyl)-amino or for C₁-C₈-alkyl which is optionally substituted by halogen,

in addition

R^3 stands for hydrogen, fluorine, chlorine, bromine, C₁-C₄-alkyl, C₁-C₄-halogenoalkyl, C₁-C₂-alkoxy-C₁-C₂-alkyl, C₁-C₄-alkoxy, C₁-C₄-halogenoalkoxy, C₁-C₄-alkylthio, C₁-C₄-halogenoalkylthio, amino, C₁-C₄-alkylamino, dimethylamino or diethylamino,

X stands for nitrogen, ~~or a -CR⁴- grouping,~~

Y stands for nitrogen or a -CR⁴- grouping,

wherein

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

Z stands for ~~nitrogen or~~ a -CR⁵- grouping,

wherein

R^5 stands for hydrogen, fluorine, chlorine,

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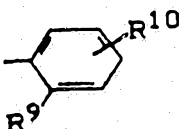


bromine, C₁-C₄-alkyl, C₁-C₄-alkoxy, C₁-C₄-halogeno-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylamino, dimethyl-amino or diethylamino, and

M stands for hydrogen or a sodium equivalent, a potassium equivalent or a calcium equivalent, an ammonium equivalent, a C₁-C₆-alkylammonium equivalent, a di-(C₁-C₄-alkyl)-ammonium or a tri-(C₁-C₄-alkyl)-ammonium equivalent,

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

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

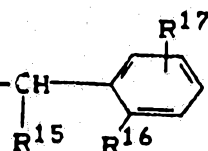
R¹ stands for the radical 

wherein

R⁹ stands for fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, difluoromethoxy, trifluoromethoxy, C₁-C₃-alkylthio, C₁-C₃-alkylsulphenyl, C₁-C₃-alkylsulphonyl, dimethylaminosulphonyl, diethylaminosulphonyl, N-methoxy-N-methylaminosulphonyl, phenyl, phenoxy or C₁-C₃-alkoxy-carbonyl and

R¹⁰ stands for hydrogen;

in addition

R¹ stands for the radical 

wherein

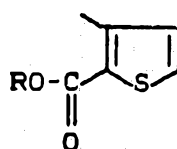
R¹⁵ stands for hydrogen,

R¹⁶ stands for fluorine, chlorine, bromine, methyl, methoxy, ethoxy, difluoromethoxy, trifluoromethoxy, methoxycarbonyl, ethoxycarbonyl, methylsulphonyl or dimethylaminosulphonyl and

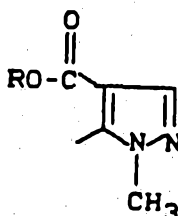
R¹⁷ stands for hydrogen;

in addition

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wherein R^1 stands for the radical 

R stands for C_1 - C_2 -alkyl, or

wherein R^1 stands for the radical 

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 -CH- grouping,~~

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

wherein

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

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

wherein

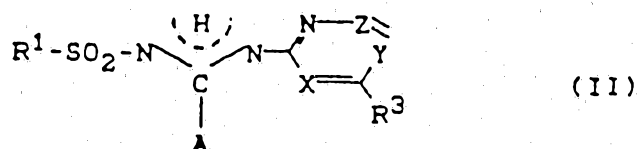
R^5 stands for hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, propoxy, isopropoxy, difluoromethoxy, methylthio, ethylthio, methylamino, ethylamino, dimethylamino or diethylamino, and

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,

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

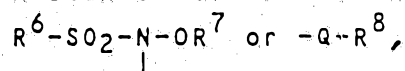
3. Process for the preparation of sulphonylaminoguanidinoazines of the general formula (I) according to Claim 1, characterized in that sulphonyl compounds of the general formula (II)



in which

R¹, R³, X, Y and Z have the meanings mentioned in Claim 1 and

A stands for one of the leaving groups given below



wherein

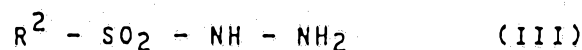
R⁶ has the meaning given in Claim 1 for R¹, but need not be identical with R¹ in each individual case,

R⁷ stands for alkyl, alkenyl or aralkyl,

R⁸ stands for alkyl, aralkyl or aryl and

Q stands for oxygen or sulphur,

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



in which

R² 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.~~

~~7~~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.

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

DATED this 8th day of May, 1990.

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

