Signum®

Signum is a fungicide with protectant and systemic activity for use against certain diseases in broccoli, Brussels sprout, cabbage, calabrese, cauliflower, strawberry (outdoor and protected), carrot, lettuce (outdoor and protected), field beans, combining peas, vining peas and blackcurrants.

A water dispersible granule containing 26.7% w/w boscalid and 6.7% w/w pyraclostrobin.

Risk and Safety Information

WARNING:
Harmful if swallowed.
Very toxic to aquatic life with long lasting effects.

Wash with plenty of water and soap thoroughly after handling.
Do not eat, drink or smoke when using this product.
If swallowed: call a poison center or doctor/physician if you feel unwell.
Rinse mouth.
Collect spillage.
Dispose of contents/container to a licensed waste disposal contractor or collection site except for triple rinsed empty containers which can be disposed of as non-hazardous waste.
To protect aquatic organisms respect an unsprayed buffer zone of 5m to surface water bodies.

PCS No: 03799
UN 3077
Environmentally hazardous substance, solid, N.O.S.
(contains pyraclostrobin, boscalid) - Marine Pollutant

To avoid risks to human health and the environment, comply with the instructions for use.

Supplied by:
BASF Ireland Limited
P.O. Box 4, Earl Road
Cheadle Hulme, CHEADLE
Cheshire SK8 6QG, UK
Tel: 01 825 5701
Fax: 01 825 2038
Emergency Information
(24 hours freephone):
0049 180 227 3112
Technical Enquiries:
0044 (0)845 602 2553 (office hours)

Authorization holder:
BASF plc, P O Box 4,
Earl Road, Cheadle Hulme,
Cheshire, SK8 6QG, UK

® = Registered trademark of BASF
FOR USE ONLY AS AN AGRICULTURAL/HORTICULTURAL FUNGICIDE, as directed below:

<table>
<thead>
<tr>
<th>Crops</th>
<th>Maximum individual dose</th>
<th>Maximum total dose</th>
<th>Latest time of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli, Brussels sprout,</td>
<td>1.0 kg/ha</td>
<td>3.0 kg/ha/crop</td>
<td>14 days before harvest</td>
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<tr>
<td>cabbage, calabrese and</td>
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<tr>
<td>cauliflower</td>
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<tr>
<td>Strawberry (outdoor and</td>
<td>1.8 kg/ha</td>
<td>3.6 kg/ha/year</td>
<td>3 days before harvest</td>
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<tr>
<td>protected)</td>
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<tr>
<td>Carrots</td>
<td>1.0 kg/ha</td>
<td>2.0 kg/ha/year</td>
<td>14 days before harvest</td>
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<tr>
<td>Lettuce (outdoor and</td>
<td>1.5 kg/ha</td>
<td>3.0 kg/ha/crop</td>
<td>14 days before harvest</td>
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<td>protected)</td>
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<tr>
<td>Field beans and combining</td>
<td>1.0 kg/ha</td>
<td>2.0 kg/ha/crop</td>
<td>21 days before harvest</td>
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<tr>
<td>peas</td>
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<tr>
<td>Blackcurrants (pre-harvest)</td>
<td>1.5 kg/ha</td>
<td>3.0 kg/ha/year</td>
<td>3 days before harvest</td>
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<td>(outdoor)</td>
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<tr>
<td>Blackcurrants (post-harvest)</td>
<td>1.5 kg/ha</td>
<td>1.5 kg/ha/year</td>
<td>Not applicable</td>
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<tr>
<td>(outdoor)</td>
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<tr>
<td>Vining peas</td>
<td>1.0 kg/ha</td>
<td>1.0 kg/ha/year</td>
<td>14 days before harvest</td>
</tr>
</tbody>
</table>

Other specific restrictions:
Applications to lettuce must only be made between 1 April and 31 October.

READ ALL PRECAUTIONS BEFORE USE

PCS No.: 03799

DO NOT APPLY MORE THAN 6 kg Signum to the same area of land per annum.

PRECAUTIONS
WEAR SUITABLE PROTECTIVE GLOVES when handling the product or handling contaminated surfaces.
WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS) AND SUITABLE PROTECTIVE GLOVES when applying by hand held equipment.
WHEN USING DO NOT EAT, DRINK OR SMOKE.
WASH HANDS before meals and after work.
IF SWALLOWED, seek medical advice immediately and show this container or label.

VERY TOXIC TO AQUATIC ORGANISMS, may cause long-term adverse effects in the aquatic environment. Do not contaminate surface waters or ditches with chemical or used container.
Do not contaminate water with the product or its container. (Do not clean application equipment near surface water / Avoid contamination via drains from farmyards and roads).
To protect aquatic organisms respect an unsprayed buffer zone of 5m to surface water bodies.
DO NOT ALLOW DIRECT SPRAY from hand-held sprayers to fall within 1m of the top of the bank of a static or flowing waterbody. Aim spray away from water.
KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDINGSTUFFS.
KEEP OUT OF REACH OF CHILDREN
KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
RINSE CONTAINER THOROUGHLY by using an integrated pressure rinsing device or manually rinsing three times. Add washings to sprayer at time of filling and dispose of safely.

STORAGE
Store in a suitable pesticide store, keep dry and protect from frost.
**DIRECTIONS FOR USE**

**IMPORTANT:** This information is approved as part of the Product Label. All instructions within this section must be read carefully in order to obtain safe and successful use of this product.

1. **Restrictions/Warnings**
   
   1.1 Processed Crops – Consult processors before use on crops destined for processing. Tests have indicated that no taints were detected in blackcurrant juice; quick frozen or canned vining peas and canned combining peas.
   
   1.2 Applications to lettuce must only be made between 1 April and 31 October.
   
   1.3 **DO NOT APPLY MORE THAN 6 kg Signum to the same area of land per annum.**
   
   1.4 For professional use only.

2. **Disease Control**

Signum is a fungicide with protectant and systemic activity for the control of a range of diseases in broccoli, Brussels sprout, cabbage, calabrese, cauliflower, strawberry (outdoor and protected), carrot, lettuce (outdoor and protected), field beans, combining peas, vining peas and blackcurrants, as summarised below:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Blackcurrant</th>
<th>Brussels sprout</th>
<th>Cabbage</th>
<th>Cauliflower, calabrese</th>
<th>Strawberry***</th>
<th>Carrot</th>
<th>Lettuce (protected and outdoor)</th>
<th>Field beans (winter and spring)</th>
<th>Peas (combining and vining)</th>
</tr>
</thead>
<tbody>
<tr>
<td>American gooseberry mildew</td>
<td>MC*</td>
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<tr>
<td><em>Sphaerotheca mors-uvae</em></td>
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<td>Blackcurrant leaf spot</td>
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<td><em>Dranenopeziza ribis</em></td>
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<tr>
<td>Grey mould</td>
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<tr>
<td><em>Botrytis cinerea</em></td>
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<td>Bean rust</td>
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<td><em>Uromyces fabae</em></td>
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<td>Chocolate spot</td>
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<tr>
<td><em>Botrytis spp.</em></td>
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<tr>
<td>White blister</td>
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<td>C*</td>
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<td><em>Albugo candida</em></td>
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<tr>
<td>Dark leaf spot</td>
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<td><em>Alternaria spp.</em></td>
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<tr>
<td>Ringspot</td>
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<tr>
<td><em>Mycosphaerella brassicola</em></td>
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<td>Bottom rot</td>
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<td><em>Rhizoctonia solani</em></td>
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<td>Watery soft rot</td>
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<td><em>Sclerotinia spp.</em></td>
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<tr>
<td>Powdery mildew</td>
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<td><em>Erisiphe heraclei</em></td>
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<td><em>Sphaerotheca macularis</em></td>
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<td>Alternaria leaf spot</td>
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<td>MC</td>
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<td><em>Alternaria dauci</em></td>
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<td>Sclerotinia rot</td>
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<td><em>Sclerotinia sclerotiorum</em></td>
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<td>Blackspot</td>
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<tr>
<td><em>Colletotrichum acutatum</em></td>
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<td>C</td>
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<tr>
<td>Leaf and pod spot</td>
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<td>MC</td>
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<tr>
<td><em>Ascochyta pisi</em></td>
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</tbody>
</table>
2.1 Resistance

In order to minimise risk of resistance:

Signum contains a QoI fungicide, pyraclostrobin and the SDHI (carboxamide) fungicide, boscalid. Signum should be used in accordance with FRAC resistance management advice for QoI and carboxamide mixtures.

Avoid using consecutive applications of Signum. Apply Signum in alternation with fungicides from a different cross-resistance group with satisfactory efficacy against the targeted diseases.

In line with FRAC guidance, the number of Signum applications should be no more than half of the total number of fungicide applications per season. Use no more than a maximum of three applications of Signum per crop in brassicas; no more than three applications per year in blackcurrants and no more than two applications per crop in other crops.

3. Crops

3.1 Brassicas (broccoli, Brussels sprout, cabbage, calabrese, cauliflower)

Time of Application
Apply Signum as a protectant spray or at the first sign of disease. Repeat sprays at 3–4 week intervals depending on disease pressure. Three applications can be made but a minimum of 14 days must elapse between the last spray and harvest.

Rate of Application
Apply 1 kg of Signum in a minimum of 200 litres of water per hectare. In dense crops, increase the water volume up to a maximum of 1000 litres of water per hectare to achieve adequate penetration and good coverage of the crop.

3.2 Strawberries

Time of Application
For optimum control of grey mould, apply Signum as a protectant spray from the beginning of bloom (white bud).

For the control of powdery mildew and Blackspot, apply Signum as a protectant spray before the appearance of disease symptoms.

Applications should be made in sequence with other products as part of a fungicide spray programme applied during flowering at 7–10 day intervals.

Two applications can be made but a minimum of 3 days must elapse between the last spray and harvest.

Rate of Application
Apply 1.8 kg of Signum in a water volume of 450–2000 litres of water per hectare, ensuring good coverage of the foliage and fruitlets.
Qualified minor use recommendation
Signum may be applied at 1.8 kg per hectare in 400 litres water per hectare although efficacy at this reduced volume has not been evaluated. Therefore application at 400 litres water per hectare is at user’s risk with regard to biological efficacy.

3.3 Carrots

Time of Application
Apply Signum as a protectant spray or at the first sign of disease. Repeat sprays at 7–14 day intervals depending on disease pressure. Two applications can be made but a minimum of 14 days must elapse between the last spray and harvest.

Rate of Application: 0.75–1.0 kg/ha
For control of powdery mildew and moderate control of alternaria, apply 0.75 kg of Signum in a water volume of 200–900 litres of water per hectare, ensuring good coverage of the foliage.
For moderate control of Sclerotinia rot, increase dose rate to 1 kg/ha of Signum in a water volume of 200-900 litres of water per hectare, ensuring good coverage of the foliage.

3.4 Lettuce

Time of Application
Apply Signum as a protectant spray from 1–2 weeks after planting. Apply sprays at 10–14 day intervals depending on disease pressure. Two applications can be made but a minimum of 14 days must elapse between the last spray and harvest.

Rate of Application
Apply 1.5 kg of Signum in a water volume of 200–900 litres of water per hectare, ensuring good coverage of the foliage.

3.5 Field Beans

Time of Application
Apply Signum as a protectant spray or at the first sign of disease. For optimum control of rust and moderate control of chocolate spot, apply sprays from early flower and repeat at a 3–4 week interval, depending on disease pressure. Two applications can be made but a minimum of 21 days must elapse between the last spray and harvest.

Rate of Application
Apply 1.0 kg of Signum in a minimum volume of 200–300 litres of water per hectare, ensuring good coverage of the foliage.

3.6 Combining peas

Time of Application
Apply Signum as a protectant spray or at the first sign of disease. For moderate control of leaf and pod spot (Ascochyta pisi), apply sprays from early flower and repeat at a 2 - 3 week interval, depending on disease pressure. Two applications can be made but a minimum of 21 days must elapse between the last spray and harvest.

Rate of Application
Apply 1.0 kg of Signum in a minimum volume of 200 - 400 litres of water per hectare, ensuring good coverage of the foliage.
3.7 Vining peas

Time of Application
For moderate control of leaf and pod spot (*Ascochyta pisi*), apply Signum as a protectant spray or at the first sign of disease. One application can be made and a minimum of 14 days must elapse between application and harvest. To maintain disease control a subsequent treatment with another product may be required 2 – 3 weeks later depending on disease pressure.

Rate of Application
Apply 1.0 kg of Signum in a minimum volume of 200 – 400 litres of water per hectare, ensuring good coverage of the foliage.

3.8 Blackcurrants (qualified minor use based on limited efficacy data)

Time of Application

*Pre-harvest treatment*
For control of grey mould (*Botrytis cinerea*), apply Signum as a protectant spray from the start of flowering.

For moderate control of American gooseberry mildew and blackcurrant leaf spot, apply Signum as a protectant spray before the appearance of disease symptoms.

Applications should be made in sequence with other products as part of a disease control programme, in which case the interval between use of Signum and subsequent fungicide treatment should be between 10–14 days, depending on disease pressure. Two applications of Signum can be made but a minimum of 3 days must elapse between the application of Signum and harvest.

*Post-harvest-treatment*
Signum may be used as post-harvest treatment to help protect against American gooseberry mildew and blackcurrant leaf spot infections, thus reducing the possibility of infection-induced premature leaf drop and reduced bush vigour, which may adversely affect crop yield in the subsequent year. Apply Signum as a protectant spray after blackcurrants have been harvested and before leaf senescence.

Rate of Application
Apply 1.5 kg of Signum in a water volume of 200 – 1000 litres of water per hectare, ensuring good coverage of the foliage and fruit.

4. Mixing and Spraying

Apply as a FINE or MEDIUM spray as defined by BCPC.

Half fill the spray tank with clean water and start agitation.
Slowly add in the required amount of product.
Rinse empty containers and add rinsings to the spray tank.
Add the remainder of the water and continue agitation until spraying is complete.
The following does not form part of the product label under S.I. No. 159 of 2012:

With many products there is a general risk of resistance developing to the active ingredients. For this reason a change in activity cannot be ruled out. It is generally impossible to predict with certainty how resistance may develop because there are so many crop and use connected ways of influencing this. We therefore have to exclude liability for damage or loss attributable to any such resistance that may develop. To help minimise any loss in activity the BASF recommended rate should in all events be adhered to.

Numerous, particularly regional or regionally attributable, factors can influence the activity of the product. Examples include weather and soil conditions, crop plant varieties, crop rotation, treatment times, application amounts, admixture with other products, appearance of organisms resistant to active ingredients and spraying techniques. Under particular conditions a change in activity or damage to plants cannot be ruled out. The manufacturer or supplier is therefore unable to accept any liability in such circumstances. All goods supplied by us are of high grade and we believe them to be suitable, but as we cannot exercise control over their mixing or use or the weather conditions during and after application, which may affect the performance of the material, all conditions and warranties, statutory or otherwise, as to the quality or fitness for any purpose of our goods are excluded and no responsibility will be accepted by us for any damage or injury whatsoever arising from their storage, handling, application or use; but nothing should be deemed to exclude or restrict any liability upon us which cannot be excluded or restricted under the provisions of any applicable law.
ADDITIONAL PRODUCT SAFETY INFORMATION
(This section does not form part of the product label under S.I. No. 159 of 2012)

Safety Data Sheet

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

SIGNUM

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: crop protection product, fungicide

1.3. Details of the supplier of the safety data sheet

Company: BASF SE
67056 Ludwigshafen
GERMANY

Contact address: BASF Ireland Ltd.
Inchera Industrial Estate, Little Island
County Cork, REPUBLIC Of IRELAND

Telephone: +353 21 451-7100
E-mail address: product-safety-north@basf.com

1.4. Emergency telephone number

International emergency number: Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 [CLP]
Aquatic Acute 1
Aquatic Chronic 1

According to Directive 67/548/EEC or 1999/45/EC
Possible Hazards:
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Harmful if swallowed.

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

Globally Harmonized System (GHS) in accordance with IE regulations.
Pictogram:

Signal Word: Warning
Hazard Statement:
H302 Harmful if swallowed.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

Precautionary Statement:
P264 Wash with plenty of water and soap thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statements (Response):
P330 Rinse mouth.
P391 Collect spillage.

Precautionary Statements (Disposal):
P501.1 Dispose of contents/container in accordance with local regulations.

According to Directive 67/548/EEC or 1999/45/EC Classification/labelling in accordance with Irish regulations.

Hazard symbol(s)
Xn Harmful.
N Dangerous for the environment.

R-phrase(s)
R22 Harmful if swallowed.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)
S2 Keep out of the reach of children.
S13 Keep away from food, drink and animal feeding stuffs.
S20/21 When using do not eat, drink or smoke.
S35 This material and its container must be disposed of in a safe way.
S46 If swallowed, seek medical advice immediately and show this container or label.
S57 Use appropriate container to avoid environmental contamination.

2.3. Other hazards
According to Regulation (EC) No 1272/2008 [CLP]
See section 12 – Results of PBT and vPvB assessment.
If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

SECTION 3: Composition/Information on Ingredients

3.1. Substances
Not applicable
3.2. Mixtures

Chemical nature

crop protection product, fungicide, water dispersible granules

Hazardous ingredients (GHS)
according to Regulation (EC) No. 1272/2008

3-Pyridinecarboxamide, 2-chloro-N-(4’-chloro[1,1’-biphenyl]-2-yl)-
Content (W/W): 26.7 %   Aquatic Chronic 2
CAS Number: 188425-85-6   H411

pyraclostrobin (ISO); methyl N-[2-[1-(4-chlorophenyl)-1H-pyrazol-3-yl]oxymethyl]phenyl](N- methoxy) carbamate
Content (W/W): 6.7 %   Acute Tox. 3 (Inhalation – mist)
CAS Number: 175013-18-0   Skin Corr./Irrit. 2
INDEX-Number: 613-272-00-6   STOT SE 3 (irr. to respiratory syst.)
Aquatic Acute 1
Aquatic Chronic 1
M-factor acute: 100
H315, H331, H335, H400, H410

Sodium diisobutynaphthalenesulphonate
Content (W/W): < 5 %   Acute Tox. 4 (Inhalation – dust)
CAS Number: 27213-90-7   Acute Tox. 4 (oral)
EC-Number: 248-326-4   Skin Corr./Irrit. 2
Eye Dam./Irrit. 1
Aquatic Chronic 3
H318, H315, H332, H302, H412

Ammonium sulphate
Content (W/W): < 15 %
CAS Number: 7783-20-2
EC-Number: 231-984-1
REACH registration number: 01-2119455044-46

Silica gel, precipitated, crystalline free
Content (W/W): < 10%
CAS Number: 112926-00-8
REACH registration number: 01-2119379499-16

Sodium sulphate
Content (W/W): < 5 %
CAS Number: 7757-82-6
EC-Number: 231-820-9
REACH registration number: 01-2119519226-43

Hazardous ingredients
according to Directive 1999/45/EC
3-Pyridinecarboxamide, 2-chloro-N-(4’-chloro[1,1′-biphenyl]-2-yl)-
Content (W/W): 26.7 %
CAS Number: 188425-85-6
Hazard symbol(s): N R-phrase(s): 51/53

pyraclostrobin (ISO); methyl N-{2-[1-(4-chlorophenyl)-1H-pyrazol-3-yloxymethyl]phenyl}(N- methoxy) carbamate
Content (W/W): 6.7%
CAS Number: 175013-18-0
INDEX-Number: 613-272-00-6
Hazard symbol(s): T, N
R-phrase(s): 23, 37/38, 50/53

Sodium diisobutynaphthalenesulphonate
Content (W/W): < 5 %
CAS Number: 27213-90-7
EC-Number: 248-326-4
Hazard symbol(s): Xn, Xi
R-phrase(s): 20/22, 38, 41, 52/53

Ammonium sulphate
Content (W/W): < 15 %
CAS Number: 7783-20-2
EC-Number: 231-984-1
REACH registration number: 01-2119455044-46

Silica gel, precipitated, crystalline free
Content (W/W): < 10 %
CAS Number: 112926-00-8
REACH registration number: 01-2119379499-16

Sodium sulphate
Content (W/W): < 5 %
CAS Number: 7757-82-6
EC-Number: 281-820-9
REACH registration number: 01-2119519226-43

For the classifications not written out in full in this section, including the indication of danger, the hazard symbols, the R phrases, and the hazard statements, the full text is listed in section 16.

SECTION 4: First-Aid Measures

4.1. Description of first aid measures
Remove contaminated clothing.

If inhaled: Keep patient calm, remove to fresh air.

On skin contact: Wash thoroughly with soap and water.

On contact with eyes: Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion: Rinse mouth and then drink plenty of water.
4.2. Most important symptoms and effects, both acute and delayed
Symptoms: No significant reaction of the human body to the product known.

4.3. Indication of any immediate medical attention and special treatment needed
Treatment: Symptomatic treatment (decontamination, vital functions).

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media
Suitable extinguishing media: dry powder, foam, water spray

Unsuitable extinguishing media for safety reasons:
carbon dioxide

5.2. Special hazards arising from the substance or mixture
carbon monoxide, hydrogen chloride, Carbon dioxide, nitrogen oxides, organochloric compounds
The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters
Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations. In case of fire and/or explosion do not breathe fumes. Keep containers cool by spraying with water if exposed to fire.

SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Use personal protective clothing. Avoid contact with the skin, eyes and clothing.

6.2. Environmental precautions
Do not discharge into drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

Do not allow contamination of public drains or surface or ground waters. Inform local water plc if spillage enters drains and the Environmental Protection Agency if it enters surface or ground waters. Keep people and animals away.

6.3. Methods and material for containment and cleaning up
For small amounts: Contain with dust binding material and dispose of.

For large amounts: Sweep/shovel up.
Avoid raising dust. Dispose of absorbed material in accordance with regulations. Collect waste in suitable containers, which can be labeled and sealed. Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations.

6.4. Reference to other sections
Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.
SECTION 7: Handling and Storage

7.1. Precautions for safe handling
No special measures necessary if stored and handled correctly. Ensure thorough ventilation of stores and work areas. When using do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift.

Protection against fire and explosion:
Avoid dust formation. Dust can form an explosive mixture with air. Prevent electrostatic charge – sources of ignition should be kept well clear - fire extinguishers should be kept handy.

7.2. Conditions for safe storage, including any incompatibilities
Segregate from foods and animal feeds.
Further information on storage conditions: Keep away from heat. Protect against moisture. Protect from direct sunlight.

Protect from temperatures above: 40 °C
Changes in the properties of the product may occur if substance/product is stored above indicated temperature for extended periods of time.

7.3. Specific end use(s)
For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters
Components with occupational exposure limits none

Refer to the current schedule of occupational exposure standards published by the Irish HSA. For normal use and handling refer to the product label/leaflet. In all other cases the following apply.

8.2. Exposure controls
Personal protective equipment

Respiratory protection: Respiratory protection not required.

Hand protection: Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) and other

Eye protection: Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection: Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
The statements on personal protective equipment in the instructions for use apply when handling crop-protection agents in final-consumer packing. Wearing of closed work clothing is recommended. Store work clothing separately. Keep away from food, drink and animal feeding stuffs.
SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form: solid, granules
Colour: brown
Odour: smoky
Odour threshold: Not determined due to potential health hazard by inhalation.

pH value: approx. 4 – 6
(1 %(m), 20 °C) (as suspension)

Melting temperature: approx. 142 – 144 °C
(OECD Guideline 102)
The data given are those of the active ingredient.

Boiling point: The product is a non-volatile solid.
Flash point: not applicable
Evaporation rate: not applicable
Flammability: not highly flammable
No dangerous quantities of flammable gases will be produced by contact with water.

Lower explosion limit: As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.
Upper explosion limit: As a result of our experience with this product and our knowledge of its composition we do not expect any hazard as long as the product is used appropriately and in accordance with the intended use.

Vapour pressure: The product has not been tested.
Density: approx. 1.57 g/cm$^3$
(20 °C)

Relative vapour density (air): not determined
Solubility in water: dispersible
Partitioning coefficient n-octanol/water (log Kow): not applicable
Self ignition: Temperature: 246 °C
No self ignition was observed up to the specified temperature.

Thermal decomposition: 150 °C, 130 kJ/kg (DSC (OECD 113)) (onset temperature)
335 °C, 130 kJ/kg (DSC (OECD 113)) (onset temperature)

Viscosity, dynamic: not applicable
Explosion hazard: not explosive
Fire promoting properties: not fire-propagating

9.2. Other information

Bulk density: 656 – 754 kg/m3
SECTION 10: Stability and Reactivity

10.1. Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

10.2. Chemical stability
The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions
No hazardous reactions if stored and handled as prescribed/indicated.

10.4. Conditions to avoid
See MSDS section 7 – Handling and storage.

10.5. Incompatible materials
Substances to avoid: strong acids, strong bases, strong oxidizing agents

10.6. Hazardous decomposition products
Hazardous decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity
Assessment of acute toxicity:
Virtually nontoxic after a single ingestion. Virtually nontoxic after a single skin contact. Virtually nontoxic by inhalation. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Experimental/calculated data:
LD<sub>50</sub> rat (oral): > 2,000 mg/kg
LC<sub>50</sub> rat (by inhalation): > 5.6 mg/l 4 h

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

LD<sub>50</sub> rat (dermal): > 2,000 mg/kg

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Irritation
Assessment of irritating effects:
Not irritating to the skin. Not irritating to the eyes.

Experimental/calculated data:
Skin corrosion/irritation rabbit: non-irritant (OECD Guideline 404)
Serious eye damage/irritation rabbit: non-irritant (OECD Guideline 405)

Respiratory/Skin sensitization
Assessment of sensitization:
There is no evidence of a skin-sensitizing potential.

Experimental/calculated data:
modified Buehler test guinea pig: Non-sensitizing.
Germ cell mutagenicity
Assessment of mutagenicity:
The product has not been tested. The statement has been derived from the properties of the individual components. Mutagenicity tests revealed no genotoxic potential.

Carcinogenicity
Assessment of carcinogenicity:
The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: 3-Pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-
Assessment of carcinogenicity:
In long-term studies in rats the substance induced thyroid tumors. The effect is caused by an animal specific mechanism that has no human counter part. In long-term studies in mice in which the substance was given by feed, a carcinogenic effect was not observed.

Reproductive toxicity
Assessment of reproduction toxicity:
The product has not been tested. The statement has been derived from the properties of the individual components. The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity
Assessment of teratogenicity:
The product has not been tested. The statement has been derived from the properties of the individual components. Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)
Assessment of repeated dose toxicity:
The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: 3-Pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-
Assessment of repeated dose toxicity:
Adaptive effects were observed after repeated exposure in animal studies.

Other relevant toxicity information
Misuse can be harmful to health.

SECTION 12: Ecological Information

12.1. Toxicity
Assessment of aquatic toxicity:
Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Toxicity to fish:
LC₅₀ (96 h) 0.088 mg/l, Oncorhynchus mykiss

Aquatic invertebrates:
EC₅₀ (48 h) approx. 0.24 mg/l, Daphnia magna (OECD Guideline 202, part 1)

Aquatic plants:
EC₅₀ (72 h) 8.43 mg/l, Agmenellum quadruplicatum
12.2. Persistence and degradability
Assessment biodegradation and elimination (H₂O):
The product has not been tested. The statement has been derived from the properties of the individual components.

*Information on: 3-Pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-*
Assessment biodegradation and elimination (H₂O):
*Not readily biodegradable (by OECD criteria).*

*Information on: pyraclostrobin (ISO); methyl N-[2-[1-(4-chlorophenyl)-1H-pyrazol-3- yloxymethyl] phenyl](N-methoxy)carbamate*
Assessment biodegradation and elimination (H₂O): Not readily biodegradable (by OECD criteria).

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12.3. Bioaccumulative potential
Assessment bioaccumulation potential:
The product has not been tested. The statement has been derived from the properties of the individual components.

*Information on: 3-Pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-*
Bioaccumulation potential:
*Bioconcentration factor: 57 – 70 (28 d), Oncorhynchus mykiss*
*Does not accumulate in organisms.*

*Information on: pyraclostrobin (ISO); methyl N-[2-[1-(4-chlorophenyl)-1H-pyrazol-3- yloxymethyl] phenyl](N-methoxy)carbamate*
Bioaccumulation potential:
*Bioconcentration factor: 379 – 507, Oncorhynchus mykiss (OECD-Guideline 305) Accumulation in organisms is not to be expected.*

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12.4. Mobility in soil
Assessment transport between environmental compartments:
The product has not been tested. The statement has been derived from the properties of the individual components.

*Information on: 3-Pyridinecarboxamide, 2-chloro-N-(4'-chloro[1,1'-biphenyl]-2-yl)-*
Assessment transport between environmental compartments:
*Following exposure to soil, adsorption to solid soil particles is probable, therefore contamination of groundwater is not expected.*

*Information on: pyraclostrobin (ISO); methyl N-[2-[1-(4-chlorophenyl)-1H-pyrazol-3- yloxymethyl] phenyl](N-methoxy)carbamate*
Assessment transport between environmental compartments:
*Following exposure to soil, adsorption to solid soil particles is probable, therefore contamination of groundwater is not expected.*

-------------------------------
12.5. Results of PBT and vPvB assessment
The product does not contain a substance fulfilling the PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.

12.6. Other adverse effects
The product does not contain substances that are listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.7. Additional information
Other ecotoxicological advice:
Do not discharge product into the environment without control.
SECTION 13: Disposal Considerations

13.1. Waste treatment methods
Must be sent to a suitable incineration plant, observing local regulations.
Contaminated packaging: Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

SECTION 14: Transport Information

Land transport

ADR
UN number: UN3077
UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains BOSCALID, PYRACLOSTROBIN)
Transport hazard class(es): 9, EHSM
Packing group: III
Environmental hazards: yes
Special precautions for user: Tunnel code: E

RID
UN number: UN3077
UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains BOSCALID, PYRACLOSTROBIN)
Transport hazard class(es): 9, EHSM
Packing group: III
Environmental hazards: yes
Special precautions for user: None known

Inland waterway transport

ADN
UN number: UN3077
UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains BOSCALID, PYRACLOSTROBIN)
Transport hazard class(es): 9, EHSM
Packing group: III
Environmental hazards: yes
Special precautions for user: None known
Transport in inland waterway vessel: Not evaluated

Sea transport

IMDG
UN number: UN 3077
UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains BOSCALID, PYRACLOSTROBIN)
Transport hazard class(es): 9, EHSM
Packing group: III
Environmental hazards: yes
Marine pollutant: YES
Special precautions for user: None known
Air transport
IATA/ICAO

UN number: UN 3077
UN proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains BOSCALID, PYRACLOSTROBIN)
Transport hazard class(es): 9, EHSM
Packing group: III
Environmental hazards: yes
Special precautions for user: None known

14.1. UN number
See corresponding entries for “UN number” for the respective regulations in the tables above.

14.2. UN proper shipping name
See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

14.5. Environmental hazards
See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

14.6. Special precautions for user
See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Regulation: Not evaluated
Shipment approved: Not evaluated
Pollution name: Not evaluated
Pollution category: Not evaluated
Ship Type: Not evaluated

SECTION 15: Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

For the user of this plant-protective product applies: ‘To avoid risks to man and the environment, comply with the instructions for use.’ (Directive 1999/45/EC, Article 10, No. 1.2)

This product may be subject to the Seveso II Directive and amendments if specific threshold tonnages are exceeded.
For further medical advice Doctors should contact the National Poison Information Centre at Beaumont Hospital, Dublin.

15.2. Chemical Safety Assessment

Advice on product handling can be found in sections 7 and 8 of this safety data sheet.
SECTION 16: Other Information

For proper and safe use of this product, please refer to the approval conditions laid down on the product label.

Full text of the classifications, including the indication of danger, the hazard symbols, the R phrases, and the hazard statements, if mentioned in section 2 or 3:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Dangerous for the environment.</td>
</tr>
<tr>
<td>T</td>
<td>Toxic.</td>
</tr>
<tr>
<td>Xn</td>
<td>Harmful.</td>
</tr>
<tr>
<td>Xi</td>
<td>Irritant.</td>
</tr>
<tr>
<td>51/53</td>
<td>Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
</tr>
<tr>
<td>23</td>
<td>Toxic by inhalation.</td>
</tr>
<tr>
<td>37/38</td>
<td>Irritating to respiratory system and skin.</td>
</tr>
<tr>
<td>50/53</td>
<td>Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
</tr>
<tr>
<td>20/22</td>
<td>Harmful by inhalation and if swallowed.</td>
</tr>
<tr>
<td>38</td>
<td>Irritating to skin.</td>
</tr>
<tr>
<td>41</td>
<td>Risk of serious damage to eyes.</td>
</tr>
<tr>
<td>52/53</td>
<td>Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</td>
</tr>
<tr>
<td>Aquatic Acute</td>
<td>Hazardous to the aquatic environment - acute.</td>
</tr>
<tr>
<td>Aquatic Chronic</td>
<td>Hazardous to the aquatic environment - chronic.</td>
</tr>
<tr>
<td>Acute Tox.</td>
<td>Acute toxicity.</td>
</tr>
<tr>
<td>Skin Corr./Irrit.</td>
<td>Skin corrosion/irritation</td>
</tr>
<tr>
<td>STOT SE</td>
<td>Specific target organ toxicity — single exposure</td>
</tr>
<tr>
<td>Eye Dam./Irrit.</td>
<td>Serious eye damage/eye irritation</td>
</tr>
<tr>
<td>H411</td>
<td>Toxic to aquatic life with long lasting effects.</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled.</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>H400</td>
<td>Very toxic to aquatic life.</td>
</tr>
<tr>
<td>H410</td>
<td>Very toxic to aquatic life with long lasting effects.</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled.</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>H412</td>
<td>Harmful to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The data do not describe the product's properties (product specification). Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

(Version: 0.0)