

## AGROProjects

### FILE DESCRIPTION

*AGROProjects* monitors the research and development of new agrochemical products, including active ingredients and combinations, from the patent disclosure stage through to full commercialization or discontinuation.

### SUBJECT COVERAGE

*AGROProjects* is designed to meet the competitor intelligence needs of the agrochemical industry. It is relevant to R&D, sales, marketing, business development and technical professionals, enabling these key functions to track the progress of new agrochemical product developments, assess the potential impact on their businesses and to identify new licensing opportunities.

The profiles summarize information on new products including sections on names and code numbers, development background, chemical structures, chemical synthesis routes, physicochemical properties, environmental fate, toxicology and ecotoxicology, formulations, biological activity and mode of action, application rates, registration status, literature and patent references.

### SOURCES

*AGROProjects* is compiled from published and unpublished sources. A significant amount of material is derived directly from the companies involved in agrochemical R&D. The companies are contacted on a regular basis to respond on specific questions and to allow them the opportunity to comment on the profiles relevant to their activities. In addition, the *AGROProjects* staff attend international meetings to obtain information from academic and commercial sources.

### TIPS

#### USE FILE 235

to track the research and development of new agrochemical products.

#### USE /CO OR CO=

to find companies of interest:

S IHARA(W)CHEMICAL/CO

#### USE /NA OR NA=

to search product names:

S PYRITHIOBAC(W)SODIUM/NA

#### USE /CN OR CN=

to search chemical names:

S SODIUM 2-CHLORO-6?/CN

#### USE /ONGOING LIMIT

to restrict retrieval to Products in Development:

S S3/ONGOING

### DIALOG FILE DATA

Inclusive Dates: From early 1990s to present

Update Frequency: Quarterly

File Size: 1,100 records as of December 2004

### CONTACT

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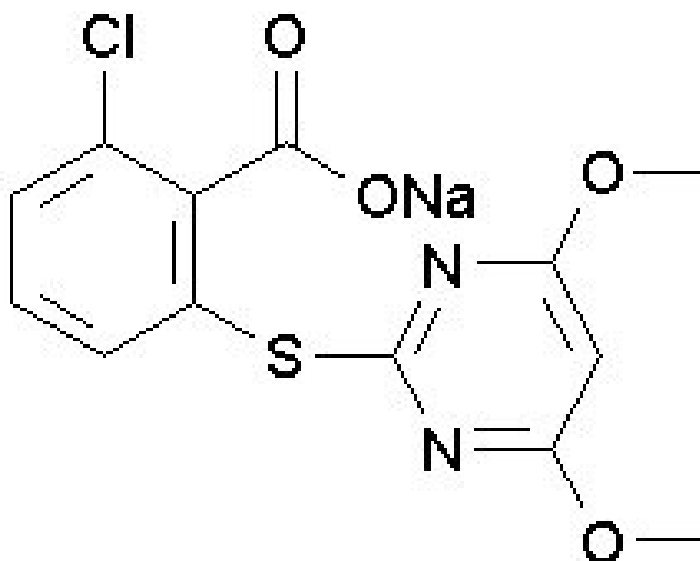
File 235  
SAMPLE RECORD

AGROProjects

DIALOG(R)File 235:AGROProjects 1990-2002/Q1  
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AA=  
/TI  
/CO,CO=,/LO,LO=  
/CO,CO=,/OW,OW=  
/CO,CO=,/CE,CE=  
/CO,CO=,/LL,LI=  
/DN,DN=,/NA,NA=  
/TN,TN=,/NA,NA=,/SY,SY=  
/CN,CN=  
  
CT=  
MF=  
MA=

0000000338 W0032L  
PYRITHIOBAC-SODIUM  
ORIGINATOR: Kumiai Chemical; Ihara Chemical  
OWNER: Kumiai Chemical; Ihara Chemical  
CO-DEVELOPER: DuPont  
LICENSEE: FMC  
PRODUCT NAME: pyriithiobac-sodium  
BRAND NAME: Staple  
CODE NUMBER: KIH 2031; KIH 8921; DPX PE350  
CHEM NAME: IUPAC: Sodium 2-chloro-6-((4,6-dimethoxyprymidin-2-yl)thio)benzoate  
CAS: 2-chloro-6-((4,6-dimethoxyprymidinyl)thio)benzoic acid sodium salt  
CHEM TYPE: Pyrimidinyl-carboxy  
MOL FORMULA: C13H10ClN2NaO4S  
MODE OF ACTION: ALS/AHAS inhibitor



ST=  
FS=  
DT=  
LA=  
/TX

PROD STATUS: Launched  
FILE SEGMENT: WEEDProjects  
DOC TYPE: Main compound  
LANGUAGE: ENGLISH  
TEXT:

PRODUCT SUMMARY:

Pyriithiobac-sodium is a selective herbicide for use against broadleaf weeds and some grasses in cotton, including bromoxynil-resistant varieties. The compound is novel in terms of its chemistry and its use. Pyriithiobac-sodium can safely be applied pre- and post-crop emergence. It is the first cotton herbicide to become available for use over the top of the crop. It was discovered by Kumiai Chemical and is being jointly developed by Kumiai and DuPont. DuPont has US, Latin American and Australian rights. DuPont has licensed FMC to sell pyriithiobac-sodium in spray programmes with its herbicide, clomazone (Command) in the US. Kumiai may also license-out the product in other markets and reports that it has no plans to launch proprietary pre-mixes. The product was registered in the US, by DuPont, in September 1995 - the first post-emergence cotton herbicide to be approved by the EPA. It has since been launched in Australia, Israel and in a number of countries in South America including an approval in Bolivia in 2000.

PHYSICOCHEMICAL DATA:

PHYSICAL FORM: Solid MELTING POINT: 233.8-234.2 oC (dec)  
SOLUBILITY: Water very soluble

MAMMALIAN TOXICOLOGY:

Acute oral (rat) LD50 >3,200 mg/kg Acute dermal (rat) LD50 >2,000 mg/kg

## SAMPLE RECORD (cont'd)

Acute inhalation (rat) LC50 6.9 mg/litre  
 Subacute dermal (21 day, rat) NOAEL = 500 mg/kg/day  
 Subchronic (90d, rat) NOAEL = 31.8 mg/kg/day (males), 40.5 mg/kg/day (females)  
 Subchronic (90 day, mouse) NOAEL = 83.1 mg/kg/day (males), 112 mg/kg/day (females)  
 Subchronic (90 day, dog) NOAEL = 160.8 mg/kg/day (males), 167.8 mg/kg/day (females)  
 Chronic (1 year, dog) NOAEL = 143 mg/kg/day (males), 639 mg/kg/day (females)  
 Chronic (78 week mouse) NOAEL = 217 mg/kg/day (males), 319 mg/kg/day (females)  
 Chronic (2 yr, rat) NOAEL = 58.7 mg/kg/day (males), 278 mg/kg/day (females)  
 Developmental toxicity (rat) NOAEL = 200 mg/kg/day (maternal) NOAEL = 600 mg/kg/day (developmental)  
 Developmental toxicity (rabbit) NOEL = 300 mg/kg/day (maternal and developmental),  
 Reference dose RfD = 0.58 mg/kg/day based on the chronic rat study.  
 Other: Non-irritating to skin, EPA toxicity category II for acute eye irritation, not a skin sensitiser, non-mutagenic, non-teratogenic, non-genotoxic. Not a neurotoxin. No evidence of endocrine effects. Based on the rat and mouse chronic/carcinogenicity studies, pyriithiobac sodium was classified by the US EPA as a Group C (possible human carcinogen with limited evidence of carcinogenicity in animals)

Metabolism studies: in rats dosed with radiolabelled pyriithiobac-sodium, over 90% of the applied dose was excreted in the urine and faeces within 48 hours. The major excreted metabolite was the desmethyl analogue arising from pyrimidinyl ring demethylation. The same product is the principal metabolite identified in cotton foliage. A further metabolite, 2-chloro-6-sulfobenzoic acid was identified in cotton metabolism studies and was attributed to soil degradation. There is no evidence that the metabolites identified in plant or animal studies are of any toxicological significance.

## ENVIRONMENTAL PROFILE:

Rainbow trout LC50 >1,000 mg/litre Bluegill sunfish LC50 >930 mg/litre

## Fate in soil:

Pyriithiobac-sodium is degraded primarily by soil microbes. It has a soil half-life of approximately 60 days.

## Fate in aquatic systems:

Pyriithiobac-sodium is degraded photochemically in water.

## FORMULATIONS:

Type	AI concn
Solution concentrate (SL)	28% (w/v)
Water-soluble powder (WP)	85% (w/w)

## PRIMARY TARGETS:

Abutilon theophrasti, Amaranthus spp, Ipomoea spp, Sesbania exaltata, Sida spinosa, Solanum nigrum, S sarrachoides, Xanthium strumarium

## CROP USES:

Cotton

## APPLICATION RATES:

Cotton: 35 g ai/ha (pre-emergence)  
 70 g ai/ha (post-emergence)

## ACTIVITY SUMMARY:

Pyriithiobac-sodium is primarily a post-emergence herbicide though it can be used from pre- to post-emergence since the compound exhibits residual activity. It is taken up rapidly by roots and shoots and has greatest activity when applied at the 1-3 leaf stage of the weeds. Death occurs 10-14 days after application. Activity is enhanced by the addition of adjuvants such as: non-ionic surfactants; silicon-type adjuvants; and crop

## SAMPLE RECORD (cont'd)

oil concentrates. Tank mixes with bromoxynil and/or glyphosate have extended pyriithiobac sodium's weed control spectrum and it is suitable for use on cotton genetically modified to be tolerant to these herbicides. Pyriithiobac has, however, been shown to be antagonistic to some other herbicides in tank mixes. FMC recommends that pyriithiobac-sodium is applied with clomazone pre-emergence, or early post-emergence following clomazone. When applied post-emergence, pyriithiobac-sodium does not damage the cotton crop at the recommended use rate. Some chlorosis and stunting has been observed, but the quality and yield of cotton is not affected. It is safe to rotational crops. Early-season insecticides can be applied in mixtures or in sequence with pyriithiobac-sodium without crop injury, although some weakening of the cotton fibre has been observed. In field trials, pyriithiobac-sodium gave better control of weeds than commercial standards at lower application rates.

## FIELD TRIAL DATA:

Cotton  
15th CWSRC 1991  
WSWS 1992  
Weed Technol 1993, 1996  
Weed Sci 1994, 1998  
Beltwide Cotton Conferences 1995  
Beltwide Cotton Conferences 1997  
Beltwide Cotton Conferences 1998

## MEETINGS:

1991: BCPC (pp 57-62); 15th Cotton Weed Science Research Conference (pp 957-958)  
1992: WSWS 45  
1994: WSWS 47; 8th IUPAC  
1995: Beltwide Cotton Conferences (pp 599-601, 607)  
1996: WSWS 49  
1997: Beltwide Cotton Conferences (pp 15-16, 765-776, 795)  
1998: Beltwide Cotton Conferences (pp 840-846, 855-858, 860-862, 866-868)

## STATUS (Regional):

/ST, TX

COUNTRY	BRAND NAME	CROPS--STATUS--DATE
Australia	Staple	Cotton--Launched--1996
Bolivia	Staple	Cotton--Approved--2000
Brazil	Staple	Cotton--Launched--1997
Colombia	Staple	Cotton--Approved--1996
Israel	Staple	Cotton--Launched--1999
Mexico	Staple	Cotton--Launched--1996
Pakistan	Staple	Cotton--Launched--1998
US	Staple	Cotton--Launched--1996

## REFERENCES:

Weed Science 42 pp 227-232 (1994); 44 pp 241-247 (1996); 46 pp 111-115 (1998)  
Weed Technology 7 pp 92-95, 619-24, 930-933 (1993); 10 pp 7-12 (1996)

SEARCH OPTIONS

BASIC INDEX

SEARCH SUFFIX	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
—	—	All Basic Index Fields	Word	S BROADLEAF(W)WEED?
/CE	CE	Co-Developer <sup>1,3</sup>	Word	S DUPONT/CE
/CN	CN	Chemical Name <sup>1,7</sup>	Word & Phrase	S ACID(W)SODIUM/CN S SODIUM 2-CHLORO?/CN
/CO	CO	Company Name <sup>1,2</sup>	Word	S KUMIAI(W)CHEMICAL/CO
/DN	DN	Product Name <sup>1,7</sup>	Word & Phrase	S PYRITHIOBAC(W)SODIUM/DN S PYRITHIOBAC-SODIUM/DN
/LI	LI	Licensee <sup>1,3</sup>	Word	S FMC/LI
/LO	LO	Originator <sup>1,3</sup>	Word	S IHARA(W)CHEMICAL/LO
/MA	MA	Mode of Action <sup>1</sup>	Word	S AHAS(W)INHIBITOR/MA
/NA	NA	Product Name <sup>1,5</sup>	Word & Phrase	S PYRITHIOBAC(W)SODIUM/NA S PYRITHIOBAC-SODIUM/NA
/OW	OW	Owner <sup>1,3</sup>	Word	S KUMIAI(W)CHEMICAL/OW
/ST	ST	Country and Status <sup>4,9</sup>	Word	S AUSTRALIA(S)LAUNCHED/ST
/SY	SY	Synonyms <sup>1,6,7</sup>	Word & Phrase	S KIH(W)2031/SY S DPX PE350/SY
/TI	TI	Title	Word	S PYRITHIOBAC(W)SODIUM/TI
/TN	TN	Brand Name <sup>1,8</sup>	Word & Phrase	S STAPLE/TN S AMISTAR TER/TN
/TX	TX	Text <sup>10,11</sup>	Word	S GRASS?(1W)COTTON/TX

<sup>1</sup> Searchable in the Basic Index and in the Additional Indexes.

<sup>2</sup> Includes Owner, Originator, Co-Developer, and Licensee.

<sup>3</sup> Also searchable as /CO and CO=

<sup>4</sup> Use the (S) operator to link a Country with Status.

<sup>5</sup> Includes Product Name, Chemical Name, Brand Name, Synonyms, and Code Number.

<sup>6</sup> Includes Code Number and a Brand Name.

<sup>7</sup> Also searchable as /NA and NA=

<sup>8</sup> Also searchable as /NA, /SY, NA=, SY=

<sup>9</sup> Also searchable as /TX.

<sup>10</sup> Display depends on the Document Type.

<sup>11</sup> Includes company information.

ADDITIONAL INDEXES

SEARCH PREFIX	DISPLAY CODE	FIELD NAME	INDEXING	SELECT EXAMPLES
AA=	AA	Agroprojects Accession Number	Phrase	S AA=W0032L
—	AZ	DIALOG Accession Number		
CE=	CE	Co-Developer <sup>1,3</sup>	Phrase	S CE=DUPONT
CN=	CN	Chemical Name <sup>1,7</sup>	Phrase	S CN=SODIUM 2-CHLORO?
CO=	CO	Company Name <sup>1,2</sup>	Phrase	S CO=KUMIAI CHEMICAL
CT=	CT	Chemical Type	Phrase	S CT=PYRIMIDINYL-CARBOXY
DN=	DN	Product Name <sup>1,7</sup>	Phrase	S DN=PYRITHIOBAC-SODIUM
DT=	DT	Document Type	Phrase	S DT=MAIN COMPOUND
FS=	FS	File Segment	Phrase	S FS=WEEDPROJECTS
—	IM	Image		
LA=	LA	Language	Phrase	S LA=ENGLISH
LI=	LI	Licensee <sup>1,3</sup>	Phrase	S LI=FMC
LO=	LO	Originator <sup>1,3</sup>	Phrase	S LO=IHARA CHEMICAL
MA=	MA	Mode of Action <sup>1</sup>	Phrase	S MA="ALS/AHAS INHIBITOR"
MF=	MF	Molecular Formula	Phrase	S MF=C13H10C1N2NAO4S
NA=	NA	Product Name <sup>1,5</sup>	Phrase	S NA=PYRITHIOBAC-SODIUM
OW=	OW	Owner <sup>1,3</sup>	Phrase	S OW=KUMIAI CHEMICAL
—	RF	References		
RT=	RT	Record Type	Phrase	S RT=IMAGE
ST=	ST	Production Status	Phrase	S ST=LAUNCHED
SY=	SY	Synonyms <sup>1,6,7</sup>	Phrase	S SY=KIH 8921
TN=	TN	Brand Name <sup>1,8</sup>	Phrase	S TN=STAPLE
UD=	—	Update	Phrase	S UD=9999

**SPECIAL FEATURES**

For command descriptions, enter HELP LIMIT, HELP SORT, HELP RANK, HELP MAP, HELP CURRENT online.

<b>LIMIT</b>	/LAUNCHED -- Launched Products /ONGOING -- Products in Development /STOPPED -- Discontinued Products	S S2/LAUNCHED S S1/ONGOING S S3/STOPPED
<b>SORT</b>	CO, DN, LO, NA, TI	SORT S1/ALL/LO SORT S3/ALL/TI
<b>RANK</b>	All phrase- and numeric-indexed fields in the Additional Indexes can be ranked.	RANK AU S3
<b>MAP</b>	CN, NA, SY	MAP NA TEMP S2 MAP SY TEMP S1
<b>CURRENT</b>	Search only the most recent year plus one (CURRENT1) to five (CURRENT5) years.	B 235 CURRENT2

**PREDEFINED FORMAT OPTIONS**

NO.	DIALOGWEB FORMAT	RECORD CONTENT
1	--	DIALOG Accession Number
2	--	Full Record
3	Medium	Full Record
4	--	Full Record with Tagged Fields
5	--	Full Record
6	Free	DIALOG Accession Number, Title, File Segment, and Document Type
7	Long	Full Record
8	Short	DIALOG Accession Number, Title, File Segment, and Document Type
9	Full	Full Record
14	--	Full Record with Tagged Fields and with Image
19	--	Full Record with Image
K	--	KWIC (Key Word In Context) displays a window of text; may be used alone or with other formats

**OTHER OUTPUT OPTIONS**

For an explanation, enter HELP TYPE, HELP UDF, HELP TAG online.

<b>USER DEFINED FORMATS</b>	User-defined formats can be specified using the display codes indicated in the Search Options tables.	TYPE S3/CO,NA/1-5. PRINT S1/DN,ST,TN/ALL DISPLAY S2/CN,OW,TX/ALL
<b>TAG</b>	Output can be displayed with tags identifying each display field..	TYPE S3/5/1-5 TAG PRINT S1/9/ALL TAG DISPLAY S2/2/1-3 TAG
<b>DIRECT RECORD ACCESS</b>	DIALOG Accession Number	TYPE 0000000338/5 DISPLAY 0000000339/CO,NA PRINT 0000000337/9

**FOR ONLINE HELP:**

See HELP FIELDS 235 for searchable fields; HELP FORMAT 235 for output formats; HELP LIMIT 235 for limits; HELP RATES 235 for cost information; HELP SORT 235 for sorts.