PACIFIC BIOCONTROL CORPORATION

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June 1, 2002

National Organic Standards Board
c/o Toni Strother
USDA/AMS/TM/NOP
Room 4008-So., Ag Stop 0268
Washington, D.C. 20250-0200
Phone: 202-690-2624
E-mail: Toni.Strother2@usda.gov

Dear Ms. Strother,

I have enclosed the following petition for amending the National List of the USDA's National Organic Program:

Petition for 2-Hydroxy-4-n-octoxybenzophenone (Sumisorb 130) as an Inert Ingredient in Mating Disruptant End-Use Products (Solid Polymeric Matrix Pheromone Dispensers) For Inclusion on the National List under Category 205.601: Synthetic Substances Allowed for Use in Organic Crop Production.

The Confidential Business Information has been included in the CBI-Copy. This includes manufacturing and formulation information including research and quality control tests and data. I have included copies of all of the references (by number) with this copy. The CBI-Deleted copy does not include these references except the product labels and MSDS for Sumisorb 130. Please contact me at my phone number or e-mail if you have any questions or need additional data. We appreciate your attention to our petition. Thank you.

Sincerely,

Kathy A Bolan

Kathy A. Bolan
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PETITION FOR AMENDING THE NATIONAL LIST OF THE USDA'S NATIONAL ORGANIC PROGRAM:

Petition for 2-Hydroxy-4-n-octoxybenzophenone (Sumisorb 130) as an Inert Ingredient in Mating Disruptant End-Use Products (Solid Polymeric Matrix, Pheromone Dispensers) For Inclusion on the National List under Category 205.601: Synthetic Substances Allowed for Use in Organic Crop Production

COMMON NAME:

2-Hydroxy-4-n-octoxybenzophenone

MANUFACTURER'S NAME:

Sumisorb 130

OTHER NAMES:

(2-Hydroxy-4-(octyloxy)phenyl)phenylmethanone
2-Hydroxy-4-(octyloxy)-benzophenone
Benzophenone-12
Octabenzone

LIST OF USES, RATES AND APPLICATIONS FOR CROPS AND LIVESTOCK USES, MODE OF ACTION FOR HANDLING USES:

Pacific Biocontrol's Mating Disruption Formulations and NOP Standards

Mating-disruption has become an effective method for control of important insect pests. As of 1997 there were more than 30 mating-disruption products registered with the EPA (1). The number has increased over the past five years. Mating disruption is key component in many area-wide pest management programs often resulting in reduced use of toxic insecticides (2, 3, 4, 5). Furthermore, this technique has become an indispensable tool for organic growers.

The new National Organic Program (NOP) standards threaten the elimination of many mating disruption products, including Pacific Biocontrol's ISOMATE® and PB-ROPE L formulations, due to restrictions on EPA's List 3 inert ingredients. These inert ingredients are used in relatively small amounts and are contained within the plastic slow-release substrates. Contact with fruit or fiber is minimal. Nevertheless, these inerts are on List #3 and therefore not acceptable for organic production under the NOP standards. The elimination of mating disruption for organic growers will create an economic crisis due to much lower levels of control.

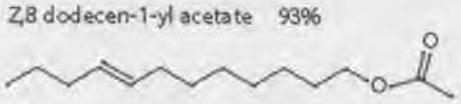
Pacific Biocontrol's Mating Disruption Technology

Pacific Biocontrol's mating disruption technology consists of the biochemical mixture being impregnated in a polyethylene tube, which is slowly released into the atmosphere and affects the mating pattern of the insect to be controlled. This material is very specific to those moths that use the biochemical mixture as part of the sex pheromone.

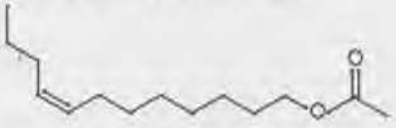
For example, Isomate®-M 100 is the discrete hand-applied synthetic formulation of the sex pheromone of the oriental fruit moth (OFM), *Grapholita molesta*, and is used to control OFM on stone fruits. Isomate®-M 100 consists of the three chemical blend of Z–8–Dodecen-1-yl acetate, E-8-Dodecen-1-yl acetate and Z-8-Dodecenol. Each of these chemicals is important in affecting the full range of behavioral events, which are important in successful sexual communication between male and female OFM.

ORIENTAL FRUIT MOTH PHEROMONE

Z,8 dodecen-1-yl acetate 93%



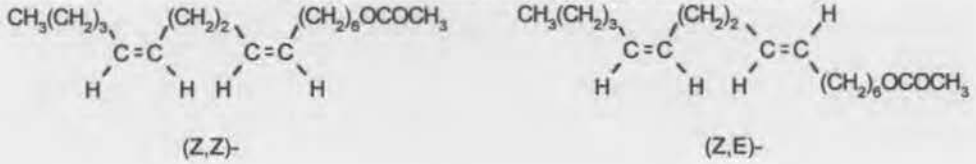
E,8 dodecen-1-yl acetate 6%



Z,8 dodecenol 1%

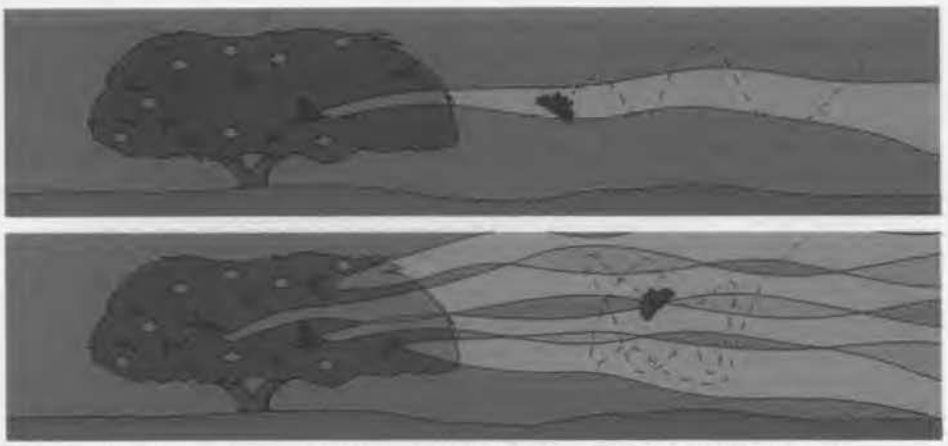
Another example is Pacific Biocontrol's PB-Rope L formulation for the control of the pink bollworm (PBW), *Pectinophora gossypiella*, in cotton. PB-Rope L consists of the two chemical blend of (Z, Z)-7, 11-Hexadecadien-1-yl Acetate and (Z, E)-7, 11-Hexadecadien-1-yl Acetate. Each of these chemicals is important in affecting the full range of behavioral events, which are important in successful sexual communication between male and female PBW.

PINK BOLLWORM PHEROMONE (GOSSYPLURE)



(Z,Z)- (Z,E)-

The mode of action by the female moth is the volatile release of the pheromone into the atmosphere, the diffusion of the biochemicals in the atmosphere, and the antennal reception of the dispersed molecules by the male insect. Mating disruption functions solely by interfering with the insect's mating behavior. This results in diminished reproductive success.



Top picture: a male moth easily finds the female by following the pheromone plume she emits.

Bottom picture: shows how **Isomate®** disrupts normal communication between male and female codling moths.

Pheromone can be very unstable and easily broken down by UV light and oxidation. Therefore, in addition to the biochemical mixture consisting of the active ingredients, the formulated product also includes inert ingredients (stabilizers) that are added to assist in the protection of the pheromone active ingredients from these outside forces. Sumisorb 130 is an inert ingredient that is added to assist in the protection of the pheromone from degradation by UV light during field use of the product.

As the mode of action of this technology is non-toxic, but behavioral, it is not expected that the formulation, consisting of the biochemical mixture and the inert ingredients, would pose any potential hazard to humans, environment, or non-target species.

What is a UV stabilizer?

Some materials absorb UV light more readily than others. These materials are much more susceptible to degradation from ultraviolet light and are more quickly damaged. When UV light is absorbed, it starts to break down the weak chemical bonds, which leads to degradation. UV stabilizers are a group of chemical agents with the ability to counteract or neutralize the harmful effects of UV light. Therefore, stabilizers like Sumisorb 130 counteract the degradation caused by UV light. Without this type of inert ingredient, UV stabilizer, the field life of the dispenser would be diminished and economics of mating disruption would be in jeopardy.

Pacific Biocontrol's Use of Sumisorb 130

At the present, Pacific Biocontrol has six registered end-use products that are formulated with Sumisorb 130 as an inert ingredient: PB-Rope L, Isomate®-M 100, Isomate®-P Pheromone, Isomate®-LPTB Pheromone, Isomate®-OBLR/PLR Plus and Isomate-M Rosso. The amount of Sumisorb 130 in Pacific Biocontrol's six products is as follows:

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Oriental Fruit Moth and Organic Production

Pacific Biocontrol's formulated product, Isomate®-M 100, is used to control the oriental fruit moth (OFM) on stone fruits. However, the added inert ingredient, Sumisorb 130, as a UV stabilizer, is on EPA's List 3 and not acceptable for organic production under NOP standards. Therefore, organic growers will not be allowed to use mating disruption products with List 3 inerts, and lower levels of control could create an economic crisis. This is especially true for the organic peach and nectarine growers who have few options for control of the OFM.

OFM is a key pest of stone fruits throughout the world. This pest is also becoming more serious in pome fruits in many areas. Conventional control measures normally include one or more applications of broad-spectrum insecticides. Much effort has been invested in development of alternative control methods due to limitations and disadvantages of conventional insecticides. Mating disruption has become an effective and economical method for controlling OFM. The total stone fruit area treated with mating-disruption formulations in North America in 2001 is estimated at 25,000 acres.

In the USA, OFM has been one of the most difficult pests to control by organic methods. Without chemical insecticides, pest numbers can increase exponentially. Most organically acceptable alternatives for OFM control do not provide effective or economical control. These methods include: mass trapping, beneficial insects (including inundative release), and microbial insecticides (Bt, virus).

Mating disruption, either alone or in combination with other biological and cultural control methods, has proven to be an effective tool for controlling OFM in organic pome fruit. This technique is the basis for any OFM management program in organic production.

Approximately 3000 acres of organic stone fruit are grown in the USA (6). The majority of these acres are treated with some type of mating disruption formulation for OFM control. In the USA it would be very difficult to grow organic peaches or nectarines for fresh market consumption without the use of mating disruption.

U.S. Organic Tree Fruit Acreage-2001				
	Apple	Pear	Stone Fruit	All Fruit
WA	6540	1308	285	8436
CA	4529	842	3112	8662
AZ	2800	-	-	2830
CO	1535	100	155	1923
ID	503	-	3	506
OR	350	500	305	1180
Others	1015	48	78	1198
US Total	17,272	2798	3038	23,835
WA transition	3411	642	75	4408

D. Granatstein, Center for Sustaining Agricultural and Natural Resources, WSU, Wenatchee, WA.

Pink Bollworm and Organic Production

The pink bollworm (PBW) is the most serious pest of cotton worldwide. In the desert southwestern United States, this pest infests approximately 175,000 ha of cotton (2001 estimate). An additional 43,000 cotton ha are infested by PBW in the Mexican states of Chihuahua and Baja California Norte (R.T. Staten, personal communication).

Quarantine programs, cultural practices, sterile moth releases and conventional chemical insecticides have been used to manage PBW populations (1). Control with conventional chemotherapy is difficult and expensive because PBW larvae are well protected from chemical contact within the cotton flowers and fruit. Multiple applications are aimed at the adult moths.

The first product registered with the US Environmental Protection Agency (EPA) for a mating disruption formulation was granted for control of PBW in 1978 (7). Mating disruption has proven very effective against PBW (1, 2, 7, 8, 9).

Organic cotton production in the USA has increased substantially since 1990 (http://www.organic-research.com/research/Papers/cotton.asp).

U.S. Estimated Organic Cotton Acreage: 1990–2000.	
Year	Acres
1990	900
1991	3290
1992	6305
1993	12,402
1994	15,856
1995	24,625
1996	10,778
1997	9,050
1998	9,368
1999	16,785
2000	13,340

"In 2000, due to state mandated boll weevil eradication program requirements, many organic cotton farmers were forced to decrease their acreage from the 16,785 acres that were harvested in 1999. These farmers would have had to spray pesticides not approved for use in organic production, thus losing their organic certification status, or plow under the crop if an unacceptable number of boll weevils were found."
(http://www.organic-research.com/research/Papers/cotton.asp).

The majority of organic cotton in the USA is grown in the desert southwest, the same area infested by PBW. An estimated total 13,460 acres of organic cotton were grown in six states.

Estimated Organic Cotton Acreage by State-2000	
State	Acres
Texas	8,692
New Mexico	2,192
California	1,030
Arizona	950
Missouri	550
Kansas	46

http://www.organic-research.com/research/Papers/cotton.asp

Mating disruption is a key component in an area-wide program to eradicate the pink bollworm. The Pink Bollworm Eradication Program is a joint effort between cotton industry representatives and growers in the USA and Mexico (http://www.google.com/search?hl=en&q=%2BPink-Bollworm-Eradication-Program). USDA-APHIS is responsible for technical support and supervision. The objective is the elimination of PBW and the annual control costs associated with its control. Key components of the program include use of transgenic cotton (Bt-cotton), sterile insect release (SIR) and pheromone mating disruption, including PB-ROPE L. Mating disruption is especially critical for use in organic cotton acres within the program. These acres cannot use transgenic cotton. As of 2002, approximately 150,000 acres are part of this program, including cotton in Texas, New Mexico and Chihuahua, Mexico.

Approximately 5000 acres are organic cotton. In 2003 and 2004, the program will expand into Arizona and California.

Pheromone Stability

The sex pheromones for oriental fruit moth and pink bollworm are prone to degradation via exposure to heat, light and oxygen. The decomposition of the pheromone in commercial formulations can result in significant decrease in the effective longevity in the orchard. Small amounts of stabilizers, i.e. Sumisorb 130, are added to protect the pheromone active ingredient from UV degradation and oxidation. The addition of these stabilizers can double the formulation's field life and thus greatly improve the economics of mating disruption. This has led to greater adoption mating disruption by growers and as result, reduced use of conventional insecticides.

In ISOMATE® formulations, these stabilizers are added to the pheromone contained within the plastic tubes. These tubes ("twist-ties" or "ropes") are applied by hand within the crop canopy. The pheromone dispensers do not come into contact with fruit or cotton fiber.

Two ISOMATE® dispensers in apples applied by hand.

ISOMATE®-applied with plastic clip in walnuts.

PB-ROPE L dispenser applied in cotton.

Some Other Uses of This Inert Ingredient

2-Hydroxy-4-n-octoxybenzophenone (referenced as PROUV PS-26, UV-531. etc.) is "used mainly as an UV absorber for PP, PE, PVC, acrylics, polycarbonate, EVA and polyester etc."(10) These types of "UV absorbers are applied widely in plastic and coating industries and used as a light stabilizer. They can significantly improve the resistance of clear coatings and plastics to failures upon exposure to sunlight such as discoloration, cracking, loss of gloss and loss of adhesion."(11)

This inert ingredient, referenced as UV-531, is also used as an "Ultraviolet Light Absorbers Wax Additive for Candlemaking (Powders)". It "stops discoloring from light" and is added to the wax. "This additive is a must to maintain color in the shelf life." (12)

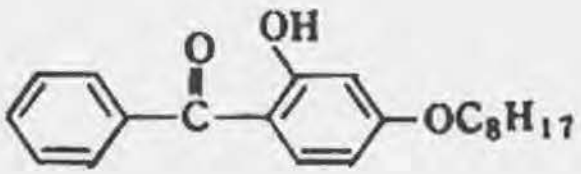
The inert ingredient, referenced as Benzophenone-12, is also used in cosmetic products as a UV absorber. (13)

SOURCES AND DETAILED DESCRIPTION OF MANUFACTURING PROCEDURES:

This inert ingredient is listed in the Merck Index under Octabenzone (14):

Systematic Name	Octabenzone
Synonyms	[2-Hydroxy-4(octyloxy)phenyl]phenylmethanone; 2-hydroxy-4-(octyloxy)benzophenone; benzophenone-12; Spectra-Sorb UV 531
Molecular Formula	$C_{21}H_{26}O_3$
Molecular Weight	326.42
Use	To stabilize polyethylene against deterioration by ultraviolet light.

Structure:



$C_{21}H_{26}O_3$

Manufacturing Process

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SUMMARY OF ANY PREVIOUS REVIEWS BY STATE OR PRIVATE CERTIFICATION AGENCIES:

This inert ingredient has been approved for use as a stabilizer in the following mating disruptant, end-use products that have been certified by the Washington State Dept. of Agriculture (WSDA) Organic Food Program: Isomate®-P Pheromone, Isomate®-M 100, and Isomate®-OBLR/PLR Plus. These three products meet the current WSDA organic standards. However, WSDA has acknowledged that these three products do not meet the USDA's NOP standards because of their inert ingredients. WSDA has petitioned the US EPA that these non-approved synthetic ingredients, i.e. Sumisorb 130, be moved from EPA's List 3 to List 4.

The state of Virginia also reviewed Isomate®-M 100 for organic use and accepted the conditions that the product contains inert ingredients, i.e. Sumisorb 130, that are under US EPA's List 3, but that the remaining ingredients are compliant under OMRI; so therefore, this product is approved for organic use until the Final Rule is in place.

PB-Rope L is allowed to be used in organic cotton in the State of Texas. However since its inert ingredients are not reclassified by the EPA as List 4 inerts, nor added to the National List of synthetic substances allowed in organic product, the use of this product will not be allowed after October 21, 2002.

Therefore, these products will not be able to be used in organic orchards and fields after October 21, 2002 if the inert ingredients, i.e. Sumisorb 130, are not approved for inclusion on the National List or are moved from EPA's List 3 to List 4.

REGULATORY STATUS WITH EPA, FDA OR STATE AUTHORITIES:

This inert ingredient, Sumisorb 130, has been approved for use as a UV stabilizer in the following six mating disruptant, end-use products under the registrant, Pacific Biocontrol Corporation, EPA Company No. 53575:

Pacific Biocontrol's Product Name	EPA Reg. No.	US EPA -Biopesticides and Pollution Prevention Division	California Dept of Pesticide Regulation
PB-Rope L	53575-15	Yes	Yes
Isomate-P Pheromone	53575-17	Yes	No
Isomate®-M 100	53575-19	Yes	Yes
Isomate®-LPTB Pheromone	53575-23	Yes	No
Isomate®-OBLR/PLR Plus	53575-24	Yes	Yes
Isomate®-M Rosso	53575-26	Yes	Yes

PB-Rope L is registered in four states, Isomate®-P Pheromone is registered in fourteen states, Isomate®-M 100 is registered in nineteen states, Isomate®-LPTB Pheromone is registered in eight states, Isomate®-OBLR/PLR Plus is registered in two states, and Isomate®-M Rosso is registered in one state. In Canada, Isomate®-M 100 has been registered since January 2002, and Isomate®-P Pheromone has been registered since May 2002.

The US FDA approved this inert ingredient, 2-Hydroxy-4-n-octoxy-benxophenone, under 21 CFR 178.2010:

> "For use only at levels not to exceed 0.5 percent by weight of olefin polymers complying with §177. 20(c) of this chapter, items 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3 or 4: Provided, that the finished polymer contacts food only of the types identified in §176.170(c) of this chapter Table 1 under categories I, IV-B, VII-B, and VIII, and under the conditions of use B through H described in Table 2 of §176.170(c) of this chapter." (15)

The olefin polymers that are listed under §177.1520(c) are the following: polypropylene, polyethylene (for use in items that contact food and for packing or holding food during cooking), olefin copolymers and poly(methylpenene). The food types identified in Table 1 under §176.170(c) include the following:

"I. Non-acid aqueous products; may contain salt or sugar or both (pH>5.0).
I. Acid products may contain salt or sugar or both, and including oil in water emulsions of low or high fat content.
IV. Dairy product and modifications:
  B. Oil in water emulsions; high or low fat.
VI. Beverages:
  A. Containing up to 8% alcohol.
  B. Non-alcoholic.
VII. Bakery products other than those included under Types VIII or IX of this table:
  B. Moist bakery products with surface containing no free fat or oil.
VIII. Dry solids with the surface containing no free fat or oil." (16)

The conditions of use described in Table under §176.170(c) include the following:

A. High temperature, heat-sterilized
B. Boiling water, sterilized

C. Hot filled or pasteurized above 150°F
D. Hot filled or pasteurized below 150°F
E. Room temperature filled and stored
F. Refrigerated storage
G. Frozen storage
H. Frozen or refrigerated storage: Ready-prepared foods intended to be reheated in container at time of use. (16)

The Agency most familiar with these types of mating disruptant products is the US EPA. In 1995, the EPA formed BPPD (Biopesticides and Pollution Prevention Division) to manage and accelerate the regulatory process for biologically-based pesticide products. The goal of the new Division was to streamline the process of registering biological products and to provide a consistently high quality of service to the companies of these types of products. Under BPPD, there are two sub-divisions, Microbials and Biochemicals. Pheromones products are reviewed under the Biochemicals Sub-division.

The US EPA has assisted the regulatory relief for pheromones and other similar semiochemicals by recognizing the difference between semiochemicals and conventional chemical pesticides.

> "The Agency has assumed that pheromones and other similar semiochemicals are different from conventional synthetic pesticides, and has attempted to facilitate their registration with reduced data requirements and regulatory relief efforts." (17)

The US EPA had registered 20 pheromones as active ingredients as of November 1999, and more than 60 products had been registered with these active ingredients.

> "As of November 1999, EPA has registered (licensed for sale) approximately 20 moth mating pheromones as pesticide active ingredients and more than 60 individual pesticide products containing these active ingredients." (18)

The first regulatory relief measures that the US EPA established for pheromone products were the tolerance exemptions for the following:

(1) In 1993, inert ingredients of semiochemical dispensers. (19)
(2) In 1994, arthropod pheromones in retrievably sized polymeric matrix dispensers. (20)
(3) In 1995, lepidopteran pheromones (as defined) in any mode application. (17)

> "Based on the information considered, the Agency concludes that tolerances are not necessary to protect the public health for the inert ingredients in the semiochemical dispenser products." (19)

> "In the proposal, EPA set forth its reasons for determining that a tolerance for these pheromone products is not necessary to protect public health." (20)

> "Lepidopteran pheromones that are naturally occurring compounds, or identical or substantially similar synthetic compounds, designated by an unbranched aliphatic chain (between 9 and 18 carbons) ending in alcohol, aldehyde or acetate functional group and containing up to 3 double bonds in the aliphatic backbone, are exempt from the requirement of a tolerance in or on all raw agricultural commodities." (17)

The EPA has recognized that pheromone products in retrievable sized, polymeric matrix dispensers pose minimal risk with their low use rates and has significantly eased the regulatory guidelines for registering these types of products.

> "Most recently the Agency has recognized that a special category of pheromone products dispensed from larger sized polymeric matrices with low annual use rates represent minimal risk for dietary and environmental exposure and has greatly eased the burden to register these items." (17)

As indicated above, the first approved exemption from tolerance was for the inert ingredients of a semiochemical dispenser. This includes UV stabilizers like Sumisorb 130.

> "All inert ingredients of semiochemical dispenser products formulated with and/or contained in dispensers made of polymeric matrix materials (including the monomers, plasticizers, dispersing agents, antioxidants, UV protectants, stabilizers and other inert ingredients), are exempted from the requirement of tolerance when used as carriers in pesticide formulations for application to growing crops only." (19)

The US EPA has been using many methods to expedite the registrations of these types of products (lepidopteran pheromones in polymeric matrix dispensers). Product chemistry data is usually the only data that is needed for registration by the US EPA. Mammalian toxicity data has been waived. For these types of products, many times the ecological effects, environmental fate and ground water data is also waived.

CHEMICAL ABSTRACT SERVICE (CAS) NUMBER OR OTHER PRODUCT NUMBER, SAMPLES OF LABELS:

CAS Number: 1843-05-6

Attached in the appendix are the labels of Pacific Biocontrol's six products (21), which are formulated with Sumisorb 130 as an UV stabilizer.

Product	EPA Reg. No.	Registration Date
PB-Rope L	53575-15	October 1993
Isomate-P Pheromone	53575-17	May 1995
Isomate®-M 100	53575-19	April 1997
Isomate®-LPTB Pheromone	53575-23	August 1999
Isomate®-OBLR/PLR Plus	53575-24	January 2002
Isomate®-M Rosso	53575-26	May 2001

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PHYSICAL PROPERTIES OF THE SUBSTANCE AND CHEMICAL MODE OF ACTION: INCLUDING ENVIRONMENTAL IMPACTS, INTERACTIONS WITH OTHER MATERIALS, TOXICITY AND PERSISTENCE, EFFECTS ON HUMAN HEALTH, EFFECTS TO SOIL ORGANISMS, CROPS OR LIVESTOCKS:

Physical Properties of Sumisorb 130 (from the Sumitomo's MSDS (12)):

Properties	Results
Appearance	Light yellow powder
Odor	Odorless
Melting Point	47-49°C
Boiling Point	160°C/0.2mmHg
Specific Gravity	1.1g/cm^3

Solubility in Water	0.1g/100g
Flash Point	236°C
Stability	Stable under ordinary conditions
Incompatibility	Strong oxidizing agents
Hazardous Decompostion	Combustion will produce CO and CO_2
Hazardous Polymerization	Will not occur

Chemical Mode of Action:

This inert ingredient functions as an UV absorber.

Environmental Impacts:

The US EPA has recognized that these types of pheromone products are expected to have no adverse effects and minimal exposure since they are very specific to the insect that they are controlling and have a small release rate in the environment.

> "IV. Assessing Risks to the Environment
> Adverse effects on nontarget organisms (mammals, birds, and aquatic organisms) are not expected because these pheromones are released in very small amounts to the environment and act on a select group of insects." (19)

The US EPA recognizes this chemical, 2-Hydroxy-4-n-octoxybenzophenone, as a High Production Volume (HPV) chemical. A HPV chemical is one that the US imports or produces at more than 1 million lbs/yr. Of these 3,000 chemicals, the EPA has found that 43% of these chemicals have no testing data on basic toxicity and believes that this lack of data compromises the public's right to know about the chemicals that are used everyday. Therefore, under the EPA's HPV Chemical Challenge Program companies that produce these chemicals are asked to submit data to fulfill the Screening Information Set (SIDS). For this chemical, 2-Hydroxy-4-n-octoxybenzophenone, this was fulfilled by Cytec Industries Inc. and Ciba Specialty Chemicals Corp. in a report (Data Summary and Test Plan (23)) submitted to the EPA October 2001. Under this report, the Environmental Toxicology data are summarized as follows:

Acute Toxicity to Fish (Zebra Fish)
LC_{50} (96 hours) >100 mg/l

Acute Toxicity to Aquatic Plants (Green Algae)
EbC_{50} (0-72 hours) > 100 mg/l

Acute Toxicity to Aquatic Invertebrates (Daphnia magna)
EC_0 (24 hours) calculated = 10 mg/l
EC_{50} (24 hours) calculated = 52 mg/l

Interaction with other materials:

Sumisorb 130, as a UV stabilizer, is added to the pheromone active ingredients. Sumisorb 130 is incorporated entirely within the lumen of the dispenser and separated from the surface by the thickness of polymer. The only interaction of Sumisorb 130 will be with the active ingredients. Sumisorb 130 will act as an UV stabilizer to help prevent degradation of the active ingredients from UV light.

TOXICITY AND PERSISTENCE, EFFECTS ON HUMAN HEALTH:

Fact Sheets are created for each new active ingredient that the US EPA registers. Instead of creating individual fact sheets for each new lepidopteran pheromone active ingredient, the US EPA created a Generic Fact Sheet for all lepidopteran pheromones since they are very similar with low toxicity and low exposure. The EPA states in this Fact Sheet that during the more than 10 years of use of lepidopteran pheromones, there have been no reports of adverse effects. Therefore, no risk is expected to humans from use of these types of pheromones.

> "Based on low toxicity in animal testing, and expected low exposure to humans, no risk to human health is expected from the use of these pheromones. During more than 10 years of use of lepidopteran pheromones as pesticides, no adverse effects have been reported." (19)

The potential health effects for Sumisorb 130 are listed on Sumitomo's MSDS (22). The inhalation and oral effects are non-toxic in normal industrial use. The dermal effects are that is not skin sensitizing. The eye effects may cause irritation. No mutagenicity or teratogenic effect was observed. The toxicological information from the MSDS is listed as follows:

Acute Effects:	The oral LD_{50} in mice is 10,985mg/kg.
Eye Effects:	Non-irritant to rabbits.
Skin Effects:	Non-irritant to rabbits.

In the Data Summary and Test Plan report (23) that Cytec Industries Inc. and Ciba Specialty Chemicals Corp. submitted October 10, 2001 under the EPA's HPV Challenge Program. Under this report, the Human Health Toxicology is summarized as follows:

Acute Toxicity:	Oral LD_{50} in rats > 10 g/kg
Genetic Toxicity (Gene Mutations):	Non-mutagenic to bacterial cells.
Genetic Toxicity (Chromosomal Aberration):	Non-clastogenic to human lymphocytes *in vitro*.

Repeated dose Toxicity:

Rat 90-day Dietary:	NOEL = 0.6% (6000 ppm)
Dog 120-day Dietary:	NOEL = 0.6% (6000 ppm)
Rat 90-day Dietary:	NOEL = 0.15% (1500 ppm)
Rat 90-day Dietary:	NOEL = 1000 ppm

Reproductive/Developmental Toxicity: Rats NOEL = 0.6% (6000 ppm) for 4 Successive Generations

EFFECTS OF SOIL ORGANISMS, CROPS OR LIVESTOCKS:

From a clean safety record, US EPA has stated that there is no risk in consuming food containing residues from these lepidopteran pheromone products. The Agency also allows the experimental use up to 250 acres with these types of products instead of the 10 acres allowed on conventional pesticides.

> "The safety record for lepidopteran pheromones has allowed the Agency to conclude that consumption of food containing residues of the pheromone presents no risk. In addition, these pheromones can be used experimentally without a permit on up to 250 acres, versus the 10-acre limit imposed on other pesticides." (19)

Under CFR 180.1001 (24), the residues of this inert ingredient are listed as exempt from tolerance "when used in accordance with good agricultural practices as inert ingredient in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest." The limits for the use of 2-Hydroxy-4-n-octoxybenzophenone are "not more than 0.2 pt of pesticide formulation." The use is listed as a light stabilizer.

Sumisorb 130, as a UV stabilizer, is added to the pheromone active ingredients, which are impregnated in plastic dispensers and then hand applied to the crop. Since the dispensers are applied on the branches (i.e. Isomate®-P Pheromone, Isomate®-M 100, Isomate®-LPTB Pheromone and Isomate®-OBLR/PLR Plus) or on the main stem (i.e. PB-Rope L), then there shouldn't be any contact with soil organisms or livestock. The ISOMATE® and PB-Rope dispensers should have little or no contact with the crop itself.

CBI-deleted

CBI-deleted

CBI-deleted

SAFETY INFORMATION, INCLUDING MSDS AND A REPORT FROM THE NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH STUDIES (NIEHS):

The manufacturer of Sumisorb 130 that is formulated as an inert ingredient in mating disruptant products for Pacific Biocontrol Corp. is Sumitomo Chemical Co. Ltd., Tokyo, Japan. The MSDS from the manufacturer is attached in the appendix. The following first aid procedures are listed:

> "In case of contact, immediately flush eyes with plenty of water, if swallowed get medical attention, flush skin with soap and plenty of water." (22)

The MSDS lists rubber gloves and safety goggles when handling this inert ingredient. Rubber gloves and safety goggles are also listed on the MSDS's for Pacific Biocontrol's products.

A search within NIEHS web site found the following no specific document for CAS No. 1843-05-6. However, a search did find a document that listed information sorted by chemical name. This list included Benzophenone-12 and listed the synonyms of (2-hydroxy-4-(octloxy)phenyl)phenylmethanone and Octabenzone. The chemical class was Benzophenone and the product class was Pharmaceutical (excipient). (25)

The US EPA has recognized these types of products with inert ingredients like Sumisorb 130 as having low exposure and minimal risks, since they have low acute toxicity and low application rates, are contained in solid, polymeric matrix dispensers, are released slowly and have little or no contact with the crop. Mating disruption is a non-toxic, behavioral method for the control of insects. It does not affect the crop, the grower, the environment, or other non-target insects.

RESEARCH INFORMATION, INCLUDING RESEARCH REVIEWS AND BIBLIOGRAPHIES:

The US EPA commented this last April in response to the Data Summary and Test Plan submitted by Cytec Industries Inc. and Ciba Specialty Chemicals Corp. October 2001. The EPA agreed with the endpoints for the Physicochemical and Environmental Fate data. Their recommendations included clarifying the method used for the biodegradation test and performing a reproductive/development toxicity test, a chronic daphnia test, and an acute test in algae. A summary of the EPA's comments follows:

> "1. *Physicochemical and Environmental Fate Data.* EPA agrees with the Test Plan and Robust Summaries for these endpoints. The submitters need to clarify the method used for the biodegradation test.
>
> 2. *Health Endpoints.* The submitters plan to conduct no further testing for acute toxicity, repeated-dose toxicity, and genetic toxicity is agreeable. EPA recommends that a reproductive/developmental toxicity test (OECD 421) be performed. The available study used a dose level that was significantly lower than the guideline-recommended limit dose.
>
> 3. *Ecotoxicity.* Because this chemical has a high Log Kow, a chronic daphnia test is recommended. The submitters should also conduct an acute test in algae because the submitted test was inadequate due to the use of a dispersant." (26)

Comments by the industry were also posted on the EPA's ChemRTK HPV Challenge Program web site. The industry (Physicians Committee for Responsible Medicine, People for Ethical Treatment of Animals, the Humane Society, the Doris Day Animal League, and Earth Island Institute), with a combined a membership of more than nine million Americans, commented that it supported the conclusions of the submitted report that no additional testing is required for this chemical. Their recommendations are as follows:

> "The test plan and robust summaries provide data for all the HPV SIDS endpoints, and the companies appropriately do not call for additional testing. We commend Cytec's and Ciba's efforts in drawing on available information to meet the SIDS endpoints under the HPV program and support the conclusion that no further testing is warranted." (27)

Under Agricola's web site, one research entry was found for this inert ingredient as an additive in the manufacture of plastics that come in contact with food. The stability of the additive was tested in food simulants under different temperature and time conditions. The results showed that this inert ingredient, as an additive in plastics that contact food, was stable. The abstract summarized the research as the following:

> "The stability of five additives used in the manufacture of plastics materials intended to be in contact with food-stuffs was tested in two EU aqueous food simulants (3% acidic acid and 15% ethanol, in olive oil and in two alternative fatty food simulants (95% ethanol and isooctane) under various conditions of temperature and time established for migration testing...The statistical evaluation of the results showed that the additives were stable in all simulants within the statistical allowances." (28)

Research has been performed in the development of sunscreen compounds to inhibit the activation of Epstein-Barr virus antigen. This inert ingredient has been shown with this type of property. The research concluded the following:

> "Results: Among the class of sunscreen agents studied, we report the ability of 2-hydroxy-4-(octyloxy)benzophenone...to inhibit the Epstein-Barr virus antigen activation." (29)

PETITION JUSTIFICATION STATEMENT – THAT STATES WHY THE SYNTHETIC SUBSTANCE IS NECESSARY, ALTERNATIVES THAT COULD BE USED, BENEFICIAL EFFECTS TO THE ENVIRONMENT, ETC:

Why the Synthetic Substance is Necessary:

Sumisorb 130, 2-Hydroxy-4-n-octoxybenzophenone, is an inert ingredient formulated in six of Pacific Biocontrol's mating disruptant end-use products. This inert ingredient is a stabilizer that protects the pheromone formulation from UV degradation when it is applied in the field.

Why Use Light Stabilizers?

Some materials absorb UV light more readily than others. These materials are much more susceptible to degradation from ultraviolet light and are more quickly damaged. Pheromone can be very unstable and easily disintegrated by UV light. When UV light is absorbed, it starts to break down the weak chemical bonds, which leads to deterioration.

UV stabilizers are a group of chemical agents with the ability to counteract or neutralize the harmful effects of UV light. Therefore, stabilizers like Sumisorb 130 counteract the degradation caused by UV light and lengthen the longevity of products that absorb UV light. Without these type of stabilizers, the longevity of the dispenser is shorten, and the pheromone may dissipate too rapidly to control multiple generations of the treated insect and provide season-long control.

Longevity of the Dispenser

Mating disruption technology is applied prior to the moth's emergence, and the pheromone releases over a range of days depending on temperature. These dispensers are designed to provide longevity, eliminate the need for multiple applications and reduce the probability of uncontrolled mating between applications. Under certain conditions, a single application may provide season-long control.

Since the application of these types of products is time-consuming and additional applications can be costly, the longevity of these dispensers is important to the grower and his pocketbook. Growers want convenience, cost-effectiveness and season-long control.

Possible Alternatives to UV Stabilizers:

There are not many alternatives to UV Stabilizers like Sumisorb 130. The other UV Stabilizers/Absorbers on the market are other benzophenones, hindered amine light stabilizers (HALS), and to a much lesser extent, benzoates, oxanilides and salicylates. However, a quick review indicated that none of these alternatives are on EPA's List 4. Therefore, they are not suitable substitutes for Sumisorb 130.

An alternative that Pacific Biocontrol has considered is formulating their products without this inert ingredient. The product will still work but at a very shorten interval.

Multiple applications will be needed for season-long control. This will force organic growers to use a product that is much more costly and more time-consuming and less effective in its control. A new product will also take to field test and to register. (Mr. Jenkins and Ms. Bolan met with the EPA in February 2002 to discuss the possibility of submitting a petition for registration of this type of product. The EPA estimated that the review time would be at least a year. That does not include the time to field test the product, which would be at least a season.)

Possible Alternatives to Mating Disruption Technology for Organic Use:

Most organically acceptable alternatives for mating disruption do not provide effective or economical control. These methods include: mass trapping, beneficial insects (including inundative release), microbial insecticides (Bt, virus), botanicals (ryania), and sterile moth release. Mating disruption, either alone or in combination with other biological and cultural control methods, has proven to be an effective tool for controlling insects.

Beneficial Effects to the Environment:

Mating disruption is a non-toxic, behavioral method for the control of insects. It does not affect the crop, the grower, the environment, or other non-target insects.

Mating disruption is an essential tool for pest management in organic production. Organic production, especially in peaches, nectarines and cotton, will be severely affected by the elimination of mating disruption products like Isomate®-M 100 and PB-Rope L.

The inert ingredient, Sumisorb 130, is added to protect the inherently volatile pheromone active ingredients. Without stabilizers, the longevity of the pheromone formulation will be significantly reduced resulting in less effective, economical control. There are no acceptable alternative inert stabilizers that provide adequate protection of the pheromones. The use of the inert stabilizer lengthens the formulation's field life and thus greatly improves the economics of mating disruption.

The inert ingredients that are contained in ISOMATE® and PB-Rope L dispensers have little or no contact with crop fruit or fiber.

The US EPA has the most familiarity with these type of pheromone products as it has registered more than 20 lepidopteran active ingredients and more than 60 products containing those active ingredients. The Agency has recognized the difference between semiochemicals and conventional chemical pesticides and facilitated regulatory relief to ease the burden of registering these types of products.

The first regulatory relief measure that the US EPA established was the tolerance exemption for inert ingredients of semiochemical dispensers. This included UV stabilizers like Sumisorb 130. In addition, the US EPA recognized that these lepidopteran pheromone products are expected to have no adverse effects and minimal exposure because of the following:

- They have low acute toxicity.
- They have low application rates.
- They are contained in dispensers.
- They are slowly released.
- They have no contact with the crop.

The US EPA has six registered products under Pacific Biocontrol with Sumisorb 130 as an inert ingredient.

Note: ISOMATE® is a registered trademark for pheromone products manufactured by Shin-Etsu Chemical Co. PB-ROPE L is used in cotton for the control of the pink bollworm. Pacific Biocontrol Corporation holds the US EPA registrations of the ISOMATE® and PB-ROPE L products. Pacific Biocontrol sells the ISOMATE® and PB-ROPE L products in the USA and Canada.

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BIOCONTROL®

PB-ROPE L

ACTIVE INGREDIENTS:	
(Z, Z)-7, 11-Hexadecadien-1-yl Acetate	46.7 %
(Z, E)-7, 11-Hexadecadien-1-yl Acetate	44.1 %
INERT INGREDIENTS	9.2 %
TOTAL	100.0 %

Keep out of reach of children

CAUTION

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

STATEMENT OF PRACTICAL TREATMENT

Avoid contact with eyes. In case of contact, immediately flush with water. Get medical attention if irritation persists. Wash hands with soap and water after handling.

ENVIRONMENTAL HAZARDS

Do not discharge into lakes, streams, ponds or public waters unless this product is specifically identified and addressed in a NPDES permit. For guidance contact your regional office of the Environmental Protection Agency.

PACIFIC BIOCONTROL CORPORATION
14615 NE 13th Court, Suite A
Vancouver, WA 98685 U.S.A.
Telephone (360) 571-2247
1-800-999-8805

MADE IN JAPAN

NET CONTENTS:
500 Dispenser Units
One dispenser contains 0.0056 fl oz or 147 mg
Total content of package: 2.8 fl oz or 73.5 gm

EPA Est. No: 47265-JP-01
EPA Reg. No: 53575-15

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage	Store in original unopened package at temperatures below 40°F in a dry location.
Pesticide Disposal	Pesticide that cannot be used according to label instructions must be disposed of according to applicable Federal, State and Local government procedures. Contact the State pesticide or EPA Hazardous Waste representative at nearest EPA regional office.
Container Disposal	Dispose of containers in a sanitary landfill, or by incineration, or, if allowed by State or Local authorities, by burning. If burned, stay out of smoke.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

It is *critical* that PB-ROPE L is applied as directed.

1. Crop	Cotton.
2. Pest	Pink bollworm *(Pectinophora gossypiella)*.
3. Rate	100-200 dispensers per acre or 250-500 dispensers per hectare.
4. Application	i. Twist dispensers loosely around the main stem of cotton near the bottom of the plant. ii. Apply immediately prior to moth emergence in the field or adjoining area. iii. Dispensers must be applied uniformly throughout the treated acreage to obtain a reduction in mating.
5. Timing	Attach dispensers at pinsquare.
6. Precautions	PB-Rope L suppresses mating of pink bollworms. However, if a major source of mated female pink bollworm moths is present in adjacent areas, migration of these moths may significantly reduce the level of control achieved. Sources are likely to be cotton (sprayed or unsprayed) or other host species within 300 yards of the treated field. This may be counteracted by: a. Treatment of **entire blocks** and not just sections of large conventionally treated fields. b. Treatment of infestation sources with PB-Rope L (e.g. a strip at least 250 yards wide nearest the treated field). c. Treatment of infestation sources with an effective insecticide. Supplementary applications of insecticide are advised when PB-Rope L is used to control very high populations of pink bollworms. Other pests must be monitored so that timely intervention with insecticides is possible.

WARRANTY AND LIMITATION OF DAMAGES

All statements concerning the use of this product apply only when used as directed. The Manufacturer makes no warranties, expressed or implied, concerning this product or its use, which extend beyond the description on the label. Read all directions carefully.

BIOCONTROL®

ISOMATE®-P PHEROMONE

ACTIVE INGREDIENTS:

3,13 Octadecadien-1-yl Acetate	90.0 %
INERT INGREDIENTS	10.0 %
TOTAL	100.0 %

Keep out of reach of children

WARNING

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING

STATEMENT OF PRACTICAL TREATMENT

Avoid inhalation of vapors or contact with liquid ingredients. Harmful if swallowed. Avoid contact with eyes. In case of eye contact, immediately flush with water. Get medical treatment if irritation persists. Wash hands thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS

Do not discharge into lakes, streams, ponds or public waters unless in accordance with NPDES permit. For guidance contact your regional office of the Environmental Protection Agency.

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Vancouver, WA 98685 U.S.A.
Telephone (360) 571-2247
1-800-999-8805

MADE IN JAPAN

NET CONTENTS:
500 Dispenser Units

EPA Est. No: 47265-JP-01
EPA Reg. No: 53575-17

One dispenser contains 0.0014 fl oz or 37.8 mg
Total content of package: 0.7 fl oz or 18.9 gm

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage	Store unopened package at temperatures below 40°F in a dry location. Product may be stored in cold storage facilities used for food storage.
Pesticide Disposal	Pesticide that cannot be used according to label instructions must be disposed of according to applicable Federal, State and Local procedures.
Container Disposal	Dispose of empty dispensers by burning or burying with prunings in winter. If burned, stay out of smoke. Dispose of dispensers according to applicable Federal, State and Local procedures. Foil envelopes can be disposed of as household refuse.
General	Consult Federal, State or Local disposal authorities for approved alternative procedures.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

It is *critical* that ISOMATE-P is applied as directed.

1. Crop	Peach, almond, nectarine, cherry, prune, plum, apricot.
2. Pest	Peachtree borer *(Synanthedon exitiosa)*.
3. Rate	Minimum of 100 dispensers per acre or 250 dispensers per hectare. Attach one dispenser per tree. Maximum of 250 dispensers per acre or 625 dispensers per hectare.
4. Application	Attach the dispensers onto branches above the mid point of the tree.
5. Timing	Apply prior to moth emergence in spring.
6. Precautions	Isomate-P suppresses peachtree borer from mating. However, if a major source of mated female moths of this species is present adjacent to the treated field, migration of these moths may significantly reduce the level of control achieved. Sources are likely to be untreated host trees within 300 yards of the treated field. This can be overcome by: a. Treatment of **entire blocks** and not just sections of large conventionally treated fields that frequently serve as sources of mated females. b. Treatment of infestation sources with Isomate-P (e.g. a strip at least 50 yards wide nearest the treated field). c. Treatment of infestation sources with an effective insecticide. Other pests must be monitored and controlled by timely intervention with conventional insecticides.

WARRANTY AND LIMITATION OF DAMAGES

All statements concerning the use of this product apply only when used as directed. The Manufacturer makes no warranties, expressed or implied, concerning this product or its use, which extend beyond the description on the label. Read all directions carefully.

BIOCONTROL®

ISOMATE®-M 100

ACTIVE INGREDIENTS:

Z-8-Dodecen-1-yl Acetate	88.5 %
E-8-Dodecen-1-yl Acetate	5.7 %
Z-8-Dodecen-1-ol	1.0 %
INERT INGREDIENTS	4.8 %
TOTAL	100.0 %

Keep out of reach of children

CAUTION

STATEMENT OF PRACTICAL TREATMENT:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention.

IF IN EYES: Flush eyes with plenty of water. Get medical attention if irritation persists.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of this product. Do not discharge into lakes, streams, ponds or public waters unless in accordance with NPDES permit. For guidance contact your regional office of the Environmental Protection Agency.

PACIFIC BIOCONTROL CORPORATION
14615 NE 13th Court, Suite A
Vancouver, WA 98685 U.S.A.
Telephone (360) 571-2247 or 1-800-999-8805

MADE IN JAPAN

NET CONTENTS:
400 Dispenser Units
One dispenser contains 0.0094 fl oz or 243.8 mg
Total content of package: 3.75 fl oz or 97.5 gm

EPA Est. No: 47265-JP-01
EPA Reg. No: 53575-19

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage	Store in original unopened package at temperatures below 40°F in a dry location. Product may be stored in cold storage facilities used for food storage.
Pesticide Disposal	Pesticide that cannot be used according to label instructions must be disposed of according to applicable Federal, State and Local government procedures. Contact the State pesticide or EPA Hazardous Waste representative at nearest EPA regional office.
Container Disposal	Dispose of dispensers in sanitary landfill or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Foil envelopes can be disposed of as household refuse.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

It is *critical* that ISOMATE-M 100 is applied as directed.

1. Crop	Peach, nectarine, almond, apricot, plum, apple, quince and macadamia.
2. Pest	Oriental fruit moth *(Grapholita molesta)*, macadamia nut borer *(Cryptophlebia ombrodelta)*, koa seed worm *(Cryptophlebia illepida)*.
3. Rate	100-150 dispensers per acre or 250-375 dispensers per hectare (0.9 fl oz or 23.4 gm a.i. per application).
4. Application	Apply dispensers in at least upper third of tree, preferably within 2-3 feet of treetop. Apply dispensers within canopy and on branches to maximize shade protection. Apply dispensers securely on lateral branches. Dispensers twisted too tightly may girdle branches. Can be applied efficiently from moving trailer or with a pole applicator.
5. Timing	Apply prior to moth emergence in the spring. Dispensers release pheromone for up to 90 days. In crops with long field seasons or in orchards with high pest populations, a second application is recommended. If subsequent applications are required, apply prior to the start of subsequent flights.
6. Precautions	Isomate-M 100 suppresses oriental fruit moth from mating. However, if a major source of mated female moths of this species is present adjacent to the treated field, migration of these moths may significantly reduce the level of control achieved. Sources are likely to be unsprayed peach, nectarine, almond, apricot, plum, apple, quince and macadamia trees or other host species within 300 yards of the treated field. This can be overcome by: a. Treatment of **entire blocks** and not just sections of large conventionally treated fields that frequently serve as sources of mated females. b. Treatment of infestation sources with Isomate-M 100 (e.g. a strip at least 50 yards wide nearest the treated field). c. Treatment of infestation source with an effective insecticide. d. Treatment of 4-6 rows along border of pheromone treated orchard with insecticide. Other pests must be monitored on a regular schedule so that timely intervention with conventional insecticides is possible.

WARRANTY AND LIMITATION OF DAMAGES

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BIOCONTROL®

ISOMATE®-LPTB PHEROMONE

ACTIVE INGREDIENTS:

(E,Z)-3,13 Octadecadien-1-yl Acetate	60.5 %
(Z,Z)-3,13 Octadecadien-1-yl Acetate	22.7 %
OTHER INGREDIENTS	16.8 %
TOTAL	100.0 %

Keep out of reach of children

CAUTION

STATEMENT OF PRACTICAL TREATMENT:

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation persists.

IF IN EYES: Flush eyes with plenty of water. Get a physician if irritation persists.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of this product. Do not discharge into lakes, streams, ponds or public waters unless in accordance with NPDES permit. For guidance contact your regional office of the Environmental Protection Agency.

PACIFIC BIOCONTROL CORPORATION
14615 NE 13th Court, Suite A
Vancouver, WA 98685 U.S.A.
Telephone (360) 571-2247
1-800-999-8805

MADE IN JAPAN

NET CONTENTS:
500 Dispenser Units
One dispenser contains 0.002 fl oz or 61.4 mg
Total content of package: 1.2 fl oz or 30.7 gm

EPA Est. No: 47265-JP-01
EPA Reg. No: 53575-23

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage	Store in original unopened package at temperatures below 40^0 F in a dry location. Only unopened or unbroken dispenser packages may be stored in cold storage facilities used for food storage. Care must be taken to avoid contamination of food or feed items.
Pesticide Disposal	Pesticide that cannot be used according to label instructions must be disposed of according to applicable Federal, State and Local government procedures. Contact the State pesticide or EPA Hazardous Waste representative at nearest EPA regional office.
Container Disposal	Dispose of dispensers in sanitary landfill or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Foil envelopes can be disposed of as household refuse.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

It is *critical* that ISOMATE-LPTB is applied as directed.

1. Crop	Peach, almond, nectarine, cherry, prune, plum, apricot.
2. Pest	Lesser peachtree borer *(Synanthedon pictipes)* and greater peachtree borer *(Synanthedon exitiosa)*.
3. Rate	Minimum of 100 dispensers per acre (0.2 fl oz or 5.5 gm a.i. per acre) or 250 dispensers per hectare. Maximum of 250 dispensers per acre (0.5 fl. oz. or 13.8 gm a.i. per acre) or 625 dispensers per hectare. Do not exceed 150 gm a.i. per acre per year.
4. Application	Attach the dispensers securely on lateral branches above the mid point of the tree Apply the dispensers within canopy to maximize shade protection. Dispensers twisted too tightly may girdle branches.
5. Timing	Apply prior to moth emergence in the spring. Dispensers release pheromone for 100 - 120 days depending on temperature. In crops with long field seasons (i.e. more than 120 days) or in orchards with high pest populations, a second application is recommended. If subsequent applications are required, apply prior to the start of subsequent flights.
6. Precautions	Isomate-LPTB suppresses lesser peachtree borer and greater peachtree borer from mating. However, if a major source of mated female moths of these species is present adjacent to the treated field, migration of these moths may significantly reduce the level of control achieved. A common source of mated females is untreated host trees within 300 yards of the treated field. This can be reduced by: a. Treatment of **entire blocks** and not just sections of large conventionally treated fields that frequently serve as sources of mated females. b. Treatment of infestation sources with Isomate-LPTB (e.g. a strip at least 50 yards wide nearest the treated field). c. Treatment of infestation source with an effective insecticide. d. Treatment of 4-6 rows along border of pheromone treated orchard with insecticide. All pests must be monitored so that timely intervention with insecticides is possible.

WARRANTY AND LIMITATION OF DAMAGES

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BIOCONTROL

ISOMATE®-OBLR/PLR PLUS

ACTIVE INGREDIENTS:	
Z-11-Tetradecen-1-yl Acetate	88.97 %
OTHER INGREDIENTS	11.03 %
TOTAL	100.00 %

226.82 mg active ingredients per dispenser

Keep out of reach of children

CAUTION

FIRST AID

If on Skin or Clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If in Eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-999-8805 for further questions.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of this product. Do not discharge into lakes, streams, ponds or public waters unless in accordance with NPDES permit. For guidance contact your regional office of the Environmental Protection Agency.

PACIFIC BIOCONTROL CORPORATION
14615 NE 13th Court, Suite A, Vancouver, WA 98685 U.S.A.
Telephone (360) 571-2247 or 1-800-999-8805

MADE IN JAPAN
EPA Est. No: 47265-JP-01
EPA Reg. No: 53575-24

NET CONTENTS: 400 Dispenser Units
One dispenser contains 0.0099 fl oz or 255.5 mg
Total content of package: 3.95 fl oz or 102.2 gm

STORAGE AND DISPOSAL
Do not contaminate water, food or feed by storage or disposal

Pesticide Storage	Store in original unopened package at temperatures below 40°F in a dry location. Only unopened or unbroken dispenser packages may be stored in cold storage facilities used for food storage. Care must be taken to avoid contamination of food or feed items.
Pesticide Disposal	Wastes resulting from this product may be disposed of on site or at an approved waste disposal facility.
Container Disposal	Dispose of dispensers in sanitary landfill or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Foil envelopes can be disposed of as household refuse.

DIRECTIONS FOR USE
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
It is *critical* that ISOMATE-OBLR/PLR PLUS is applied as directed.

1. Crop	Apple, pear, apricot, cherry, peach and plum.
2. Pest	Obliquebanded leafroller *(Choristoneura rosaceana)* and pandemis leafroller *(Pandemis pyrusana)*.
3. Rate	Minimum of 200 dispensers per acre (1.75 fl oz or 45.36 gm a.i. per acre) or 500 dispensers per hectare. Maximum of 400 dispensers per acre or 1000 dispensers per hectare (3.5 fl oz or 90.73 gm a.i. per acre). Apply double rate of dispensers to edges of orchard. Do not exceed 150 gm a.i. per acre per year
4. Application	Apply dispensers securely to lateral branches in upper third of tree canopy, preferably within 2-3 feet of treetop. Dispensers twisted too tightly may girdle branches. Can be applied efficiently from a moving trailer or with a pole applicator.
5. Timing	Apply prior to leafroller emergence in the spring. Dispensers release pheromone for up to 150 days depending on temperature. In crops with long field seasons (i.e. more than 150 days), a second application is recommended. If subsequent applications are required, apply prior to the start of subsequent flights. Consult your local pest control advisor for proper timing.
6. Note	Isomate-OBLR/PLR Plus suppresses the obliquebanded and pandemis leafrollers from mating. However, if a major source of mated female moths of these species is present adjacent to the treated field, migration of these moths may significantly reduce the level of control achieved. Sources are likely to be unsprayed apple, pear, peach, apricot, plum, prune and cherry trees or other wild plant host species within 300 yards of the treated field. This can be reduced by: a. Treatment of **entire blocks** and not just sections of large conventionally treated fields that frequently serve as sources of mated females. b. Treatment of infestation sources with Isomate-OBLR/PLR Plus (e.g. a strip at least 50 yards wide nearest the treated field). c. Treatment of infestation source with an effective insecticide. d. Treatment of 4-6 rows along border of pheromone treated orchard with insecticide. Supplementary applications of insecticide are advised when Isomate-OBLR/PLR Plus is used to control high populations of leafrollers. All pests must be monitored so that timely intervention with insecticides is possible.

WARRANTY AND LIMITATION OF DAMAGES

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BIOCONTROL

ISOMATE®-M ROSSO

ACTIVE INGREDIENTS:	
Z-8-dodecen-1-yl acetate	88.5 %
E-8-dodecen-1-yl acetate	5.7 %
Z-8-dodecen-1-ol	1.0 %
OTHER INGREDIENTS	4.9 %
TOTAL	100.0 %

Keep out of reach of children

CAUTION

FIRST AID

If on Skin or Clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If in Eyes	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-999-8805 for further questions.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of this product. Do not discharge into lakes, streams, ponds or public waters unless in accordance with NPDES permit. For guidance contact your regional office of the Environmental Protection Agency.

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Vancouver, WA 98685 U.S.A.
Telephone (360) 571-2247 or 1-800-999-8805

MADE IN JAPAN
EPA Est. No: 47265-JP-01
EPA Reg. No: 53575-26

NET CONTENTS: 400 Dispenser Units
One dispenser contains 0.01 fl oz or 264.3 mg
Total content of package: 4.06 fl oz or 105.7 gm

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal

Pesticide Storage	Store in original unopened package at temperatures below 40°F in a dry location. Product may be stored in cold storage facilities used for food storage.
Pesticide Disposal	Pesticide that cannot be used according to label instructions must be disposed of according to applicable Federal, State and Local government procedures. Contact the State pesticide or EPA Hazardous Waste representative at nearest EPA regional office.
Container Disposal	Dispose of dispensers in sanitary landfill or by incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke. Foil envelopes can be disposed of as household refuse.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

It is *critical* that ISOMATE-M ROSSO is applied as directed.

1. Crop	Peach, nectarine, almond, apricot, plum, apple, quince and macadamia.
2. Pest	Oriental fruit moth *(Grapholita molesta)*, macadamia nut borer *(Cryptophlebia ombrodelta)*, koa seed worm *(Cryptophlebia illepida)*.
3. Rate	200 dispensers per acre or 500 dispensers per hectare (1.94 fl oz or 50.5 gm a.i. per application). Do not exceed 150 gm a.i. per acre per year.
4. Application	Apply dispensers in upper third of tree, preferably within 2-3 feet of treetop. Apply dispensers within canopy and on branches to maximize shade protection. Apply dispensers securely on lateral branches. Dispensers twisted too tightly may girdle branches. Can be applied efficiently from moving trailer or with a pole applicator.
5. Timing	Apply prior to moth emergence in the spring. Dispensers release pheromone for up to 120 days depending on temperature. In crops with long field seasons (i.e. more than 120 days), a second application is recommended. If subsequent applications are required, apply prior to the start of subsequent flights. Consult your local pest control advisor for proper timing.
6. Precautions	Isomate-M Rosso suppresses orient fruit moth, macadamia nut borer and koa seed worm from mating. However, if a major source of mated female moths of these species is present adjacent to the treated field, migration of these moths may significantly reduce the level of control achieved. Sources are likely to be unsprayed peach, nectarine, almond, apricot, plum, apple, quince and macadamia trees or other host species within 300 yards of the treated field. This can be overcome by: a. Treatment of **entire blocks** and not just sections of large conventionally treated fields that frequently serve as sources of mated females. b. Treatment of infestation sources with Isomate-M Rosso (e.g. a strip at least 50 yards wide nearest the treated field). c. Treatment of infestation source with an effective insecticide. d. Treatment of 4-6 rows along border of pheromone treated orchard with insecticide Supplementary applications of insecticide are advised when Isomate-M Rosso is used to control very high populations of oriental fruit moth, macadamia nut borer or koa seed worm. All pests must be monitored so that timely intervention with insecticides is possible.

WARRANTY AND LIMITATION OF DAMAGES

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MATERIAL SAFETY DATA SHEET

Required under OSHA's Hazard Communication Standard 29 CFR 1910-1200

IDENTITY (As Used on Label and List)
Sumisorb 130 2-hydroxy-4-n-octoxybenzophenone

Section I

Manufacturer's Name Sumitomo Chemical Co., Ltd.	Emergency Telephone Number 06-220-3738 (Japan)
Address (Number, Street, City, State, and ZIP Code) 5-33, Kitahama 4-chome Chuo-ku, Osaka 541, Japan	Telephone Number for information 06-220-3738 (Japan)
	Data Prepared December 10, 1992
	Signature of Preparer (optional)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	%(Optional)
No hazardous components				

This chemical is listed on the TSCA Inventry (CAS No. 1843-05-6)

Section III - Physical Characteristics

Boiling Point	160°C / 0.2 mmHg	Specific Gravity (H_2O=1)	1.1 g/cm^3
Vapor Pressure (mm Hg)	Not applicable	Melting Point	47 - 49°C
Vapor Density (AIR=1)	Not applicable	Evaporation Rate (Butyl Acetate=1)	Not applicable

Solubility in Water 0.1 g/100g

Appearance and Odor Light yellow powder

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	236°C	Flammable Limits Not applicable	LEL	UEL

Extinguishing Media Form, dry chemical, carbon dioxides or water spray.

Special Fire Fighting Procedures Fire-fighters should wear self-contained breathing apparatus

Unusual Fire and Explosion Hazards Avoid dispersion of dust in air to avoid explosion potential

MSDS continued on next page

Section V – Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	Not applicable
Incompatibility (Materials to Avoid)			Strong oxidizing agents
Hazardous Decomposition or Byproducts			Combustion will produce CO and CO_2
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Not applicable

Section VI – Health Hazard Data

Route(s) of Entry: Inhalation? Skin? Ingestion?

Health Hazards (Acute and Chronic)

LD_{50} (oral mice) : 10,985 mg/kg

Skin irritation (Rabbits): Non irritant

Eye irritation (Rabbits) : Non irritant

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	None	None	None

Signs and Symptoms of Exposure

No information

Medical Conditions Generally Aggravated by Exposure: No information

Emergency and First Aid Procedures

In case of contact, immediately flush eyes with plenty of water, if swallowed get medical attention, flush skin with soap and plenty of water.

Section VII – Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Scoop up and place in a suitable container.

Waste Disposal Method

Burn in a controlled incinerator.

Precautions to Be Taken in Handling and Storing

Store in a cool, dry and dark place.

Other Precautions

None

Section VIII – Control Measures

Respiratory Protection (Specify Type): No required under normal handling. Use adequate ventilation in work room.

Ventilation	Local Exhaust: Acceptable	Special: Preferred	
	Mechanical (General): Preferred	Other: Preferred	
Protective Gloves: Rubber gloves		Eye Protection: Safety goggles	

Other Protective Clothing or Equipment: Protective clothing, eye bath and mask.

Work/Hygienic Practices

End of MSDS.