Safety Data Sheet (SDS) According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

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SECTION 1. Identification

Product identifier

Product No 4401
Product name Crizotinib
UN number UN3077

Recommended use of the chemical and restrictions on use

Identified uses This product is intended for research purposes only.

Manufacturer, importer, supplier

Manufacturer address Cell Signaling Technology, Inc.
3 Trask Lane
Danvers, MA 01923
United States
TEL: +1 978 867 2300
FAX: +1 978 867 2400
Website www.cellsignal.com
Email address support@cellsignal.com
Emergency telephone number In case of emergency call CHEMTREC 1-800-424-9300

SECTION 2. Hazard(s) identification

Classification

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2

GHS Label elements, including precautionary statements

Signal Word
Warning

Hazard statement(s)
May cause an allergic skin reaction. Causes serious eye damage. Suspected of causing genetic defects.

Precautionary Statement(s)
Wash face, hands and any exposed skin thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated work clothing should not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Store locked up.
Dispose of contents/container to an approved waste disposal plant.

Supplementary Hazard Information

No information available.
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life.

SECTION 3. Composition/information on ingredients

Formula	$C_{21}H_{22}Cl_2FN_5O$
Molecular Weight	450.34 g/mol
Chemical nature	Monoconstituent substance
Synonyms	Crizotinib; PF-2341066; Xalkori®; 3-[(1R)-1-(2,6-dichloro-3-fluorophenyl)ethoxy]-5-(1-piperidin-4-ylpyrazol-4-yl)pyridin-2-amine

Chemical Name	CAS No	Weight %
2-Pyridinamine, 3-((1R)-1-(2,6-dichloro-3-fluorophenyl)ethoxy)-5-(1-(4-piperidinyl)-1H-pyrazol-4-yl)-	877399-52-5	100

SECTION 4. First-aid measures

Eye contact	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing.
Skin contact	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Consult a physician.
Inhalation	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration.
Ingestion	Clean mouth with water. Consult a physician. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Most important symptoms and effects, both acute and delayed

Visual changes such as perceived flashes of light, blurry vision, light sensitivity, swelling of your hands and feet, nausea, diarrhea, vomiting, and constipation.

Indication of any immediate medical attention and special treatment needed

May cause sensitization of susceptible persons. Treat symptomatically.

Advice for emergency responders

General advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. If symptoms persist, call a physician.

Protection of first-aiders	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization by inhalation and skin contact.

Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

Protective Equipment and Precautions for Firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Use personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing.
Other information	No information available.

Environmental precautions

Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Use personal protective equipment. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Take up mechanically, placing in appropriate containers for disposal. Avoid dust formation. After cleaning, flush away traces with water. Take precautionary measures against static discharges.

SECTION 7. Handling and storage

Precautions for safe handling

Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions	Keep away from direct sunlight.
Packaging material	No information available.
Incompatible products	None known based on information supplied.

SECTION 8. Exposure controls/personal protection

Control parameters

Appropriate engineering controls

Showers, eyewash stations, and ventilation systems.

Individual protection measures, such as personal protective equipment

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

Eye/face protection	Tightly fitting safety goggles
Skin and body protection	Wear protective gloves/clothing.
Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hygiene measures	Provide regular cleaning of equipment, work area and clothing. Wash hands before breaks and immediately after handling the product.

SECTION 9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state	Solid		
Appearance	Crystalline Powder	**Color**	Off-white
Odor	No information available	**Odor Threshold**	No information available

Property	**Values**	**Remarks Method**
pH	No information available	
Melting point/freezing point	196-207 °C	
Initial boiling point and boiling range		
Flash point		-
Evaporation rate	No information available	
Flammability (solid, gas)	No information available	
Upper flammability limit	No information available	
Lower flammability limit	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Relative density	No information available	
Solubility	Practically insoluble	
Solubility in other solvents	No information available.	
Partition coefficient: n-octanol/water	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Viscosity	No information available	
Viscosity, dynamic	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other information

Softening point	No information available
Molecular Weight	450.34 g/mol
VOC content	No information available
Density	No information available.
Bulk Density VALUE	No information available.

SECTION 10. Stability and reactivity

Reactivity

No information available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Hazardous reactions	None under normal processing.
Hazardous polymerization	None under normal processing.

Conditions to Avoid

Extremes of temperature and direct sunlight.

Incompatible Materials

None known based on information supplied.

Hazardous Decomposition Products

None known based on information supplied.

SECTION 11. Toxicological information

Information on likely routes of exposure

Inhalation	May be harmful if inhaled.
Eye contact	May cause irreversible damage to eyes.
Skin contact	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	May be harmful if swallowed:

Information on toxicological effects

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Symptoms	Visual changes such as perceived flashes of light, blurry vision, light sensitivity, swelling of your hands and feet, nausea, diarrhea, vomiting, and constipation.
Sensitization	May cause sensitization by skin contact.
Mutagenic effects	Crizotinib was genotoxic in an in vitro micronucleus assay in Chinese Hamster Ovary cultures, in an in vitro human lymphocyte chromosome aberration assay, and in in vivo rat bone marrow micronucleus assays. Crizotinib was not mutagenic in vitro in the bacterial reverse mutation (Ames) assay.
Carcinogenicity	No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.
Reproductive toxicity	This material is classified as a Pregnancy Category D: Positive evidence of risk. Crizotinib is considered to have the potential to impair reproductive function and fertility in humans based on findings in repeat-dose toxicity studies in the rat. Findings observed in the male reproductive tract included testicular pachytene spermatocyte degeneration in rats given greater than or equal to 50 mg/kg/day for 28 days. Findings observed in the female reproductive tract included single-cell necrosis of ovarian follicles of a rat given 500 mg/kg/day for 3 days.
Developmental toxicity	Can cause fetal harm when administered to a pregnant woman based on its mechanism of action. In nonclinical studies in rats, crizotinib was embryotoxic and fetotoxic at exposures

	similar to and above those observed in humans at the recommended clinical dose of 250 mg twice daily.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Chronic Toxicity	Repeated contact may cause allergic reactions in very susceptible persons. Avoid repeated exposure.
Neurological effects	No information available.
Aspiration Hazard	No information available.

SECTION 12. Ecological information

Ecotoxicity

Very toxic to aquatic life

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
2-Pyridinamine, 3-((1R)-1-(2,6-dichloro-3-fluorophenyl)ethoxy)-5-(1-(4-piperidinyl)-1H-pyrazol-4-yl)-	EC50 < 0.10-0.19 mg/L (Skeletonema costatum)72H	LC50 >5.2 mg/L (Cyprinodon variegatus) 96H	EC50 0.66 mg/L (Tisbe battagliai) 48H

Persistence and degradability	No information available.
Bioaccumulation	Not likely to bioaccumulate.
Mobility	Is not likely mobile in the environment due its low water solubility

Chemical Name	Octanol-Water Partition Coefficient
2-Pyridinamine, 3-((1R)-1-(2,6-dichloro-3-fluorophenyl)ethoxy)-5-(1-(4-piperidinyl)-1H-pyrazol-4-yl)-	1.83

Other adverse effects

No information available.

SECTION 13. Disposal considerations

Waste Disposal Methods

Should not be released into the environment. Dispose of in accordance with local regulations.

Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way.

SECTION 14. Transport information

DOT

UN number	UN3077
UN proper shipping name	Environmentally hazardous substance, solid, n.o.s (crizotinib)
Transport hazard class(es)	9
Packing group	III
Special provisions	146, 335, A112, B54, B120, IB8, IP3, N20, T1, TP33
Emergency response guide number	171

IATA

UN number	UN3077

UN proper shipping name	Environmentally hazardous substance, solid, n.o.s (crizotinib)
Transport hazard class(es)	9
Packing group	III
ERG code	9L

SECTION 15. Regulatory information

North American Inventory Listing

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
2-Pyridinamine, 3-((1R)-1-(2,6-dichloro-3-fluorophenyl)ethoxy)-5-(1-(4-piperidinyl)-1H-pyrazol-4-yl)-	Not Listed	Not Listed	Not Listed	Not Listed

Canadian Workplace Hazardous Materials Information System (WHMIS) Classification

Class D2A - Very Toxic Material at >= 0.1%

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated under applicable state right-to-know regulations

U.S. FIFRA Label Information

This product does not contain any substances regulated as pesticides.

US Commerce Department - Export Administration Regulations Information

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

U.S. Drug Enforcement Administration Information

This product does not contain any substances regulated under the DEA.

SECTION 16. Other information

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Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet