

DuPont™ Capstone™ 4-I

PERFLUOROBUTYL IODIDE, 1-IODOPERFLUOROBUTANE



DuPont™ Capstone™ 4-I is a versatile fluorinated iodide useful in preparing repellent and surfactant products. It is based on four fluorinated carbon molecules that cannot break down to PFOA in the environment. Capstone™ 4-I is part of a large family of fluorinated specialty monomers offered by DuPont. For information on other Capstone™ monomers, use the contact information below.

Specifications

Property	Limit, wt%
Perfluorobutyl iodide	90 min
Perfluoroethyl iodide	2.0 max
Perfluorohexyl iodide	1.0 max
Perfluorohexane	8.5 max
Perfluorooctane	1.0 max

Uses

Capstone™ 4-I is a short-chain perfluorinated monomer useful in producing repellents, lubricants and surfactants. The perfluoroalkyl group of Capstone™ 4-I can provide formulations with lower surface energy, improved chemical stability and surface lubricity, and enhanced molecular orientation.

In addition, Capstone™ 4-I can be oxidized to the acid fluoride and converted to carboxylic acid derivatives through hydrolysis. It can add across olefins or initiate telomerization reactions. Following are specific uses for Capstone™ 4-I:

Surfactants

- Sulfinic and sulfonic acids as surfactants and detergents (US4866190)
- Surfactants for liquid or supercritical carbon dioxide reactions (JP2003238473)
- Aromatic sulfates as surfactants (JP2001097943, US5491257)
- Tertiary perfluoroalkoxide surfactants in PTFE dispersion polymerization (US4564661)

Lubricants

- Fluorocarbon waxes (US3956000)
- Phosphines as oil additives (DE2110769)
- Spiroindane derivatives as oil additives (JP3824339)
- Fluoroalkylsilanes as hydraulic fluids (US5196614)
- Carboxylate salts as antiwear additives (US5202038)
- Carboxylic ester or amide for magnetic recording media (JP09104881)

Liquid Crystalline Materials and Devices

- Esters (JP2003201274)
- Biphenyls (WO2003040074, JP06056703)
- Fluorosilanes (US6737124)
- Hybrid polymers (US6919404)
- Polyimides, polyamic acids, and poly(amide esters) (US6194039)
- Benzylideneanilines (JP04069372)

Medical and Biological Applications

- Steroids (US7148213, US5719159, WO9313123)
- Peptidyl perfluoroalkyl ketones as inhibitors of elastase (US6008196)
- Carboxamides as surfactant intermediates and as drugs (FR2623497)
- Triazole antifungal agents (US4727159)
- Hydroxamic acid derivatives as pesticides (WO9967209)
- Phthalamides as insecticides (WO2005095351)
- Perfluoroalkylanilines for insecticides (US6717013)
- Anilide derivatives as agricultural chemicals (WO2002096882)
- Fluorinated polysiloxanes for cosmetics (JP09291010, JP09104757, JP3558410)
- Perfluorocarbon emulsions as blood substitutes (US2004057906)
- Modified lipids for drug delivery systems (US6090800, US6537246)
- Optoacoustic contrast agents for medical diagnostics (US6123923)
- Cosmetic skin or hair care compositions (US5851544)
- Prodrugs comprising fluorinated amphiphiles or steroids (WO9850041)
- Surfactant for perfluorocarbon microemulsions for blood substitutes (US4975468)

Repellent Coatings

- Arylguanamine derivatives as water and oil repellents for textiles (JP03145477)
- Perfluoroalkylphenol stain resists for synthetic polymer fibers (WO2002055464)
- Fluoroalkyl triazines as water repellent (US6391948)
- Urethanes for water- and oil-repellents (WO006013791)
- Fluorinated polyurethanes as soil-release finishes for textiles (US3872058)



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Advanced Materials

- Maleimide polymers as photoresist compositions (US2002164541)
- Sulfonates and polycarbonates as fireproofing and fire-resistant agents (JP2002265432)
- Fluoroelastomers (WO2001081464)
- Fluorinated azo dyes for thermal-transfer printing (JP3009267)
- Fluoropolymer ion exchanger membranes (JP58127738)
- Sulfates as heat-responsive gel compositions (JP2006241379)
- Imidazolium compounds as ionic liquids (WO2006051897)
- Phosphonic acids for treating metal coated silicon wafers (US6824882)
- Functionalization of carbon nanotubes (US2006257556)
- Poly(organosiloxanes) for hybrid organic-inorganic dielectrics (US7144827)
- Hybrid organic-inorganic materials for optical devices (US2003235933)
- Phosphinic acid salts for optical devices (WO2003082884)
- Fluoroalkyl-substituted styrene polymers for gas separation membranes (JP63097215)

Typical Characteristics*

CAS Name	Perfluorobutyl iodide
Other Name	Capstone™ 4-I
CAS Number	423-39-2
Formula	CF ₃ CF ₂ CF ₂ CF ₂ I
Molecular Weight	346
Form	Liquid to semi-solid
Color	Purple
Volatiles, %	>98
Solubility in Water, wt%	0
Solubility in Acetone, wt%	>50
Solubility in Methyl Ethyl Ketone, wt%	10-50
Solubility in Trichloroethylene, wt%	10-50
Solubility in Isobutyl Alcohol, wt%	10-50
Odor	Iodine, impurity
Boiling Point, °C (°F)	68 (154)
Melting Point, °C (°F)	<-70 (<-94)
Fluorine, %	49.4
Specific Gravity, at 25°C	2.0
Thickening Point, °C	<25
Viscosity, cP/°C	<7/30
Flash Point	Self extinguishing

* This table gives typical properties based on historical production performance. DuPont does not make any express or implied warranty that these products will continue to have these typical properties.

Handling

Capstone™ 4-I is a skin and eye irritant. Care should be taken to avoid exposure by wearing appropriate gloves, safety glasses and other protective equipment as needed. Refer to the MSDS for further handling information.

Packages and Shipping Information

Capstone™ 4-I is not regulated by DOT, IMO or IATA. It is available in net 22.7 kg (50 lb) pails and in net 3.63 kg (8 lb) drums. Samples are also available.

Contact Us

For orders, samples, or technical inquiries, contact any of these locations world-wide:

United States

Phone 866-828-7009 (toll-free)
706-937-7552

Mail DuPont Chemical Solutions Enterprise
Customer Service Center, BMP 23
Wilmington, DE 19899 USA

Website www.capstone.dupont.com

Regional Offices

Contact the office nearest you.

Asia Pacific

	Phone
DuPont Kabushiki Kaisha	81 3 5521 8670
DuPont (Korea) In	82 2 2222 5309
DuPont China Holding Co Ltd	0086-65058000-1010
DuPont Asia Pacific (Hong Kong)	852 2 734 5345
DuPont Company (Singapore) Pte Ltd	65 6586 3626
DuPont Malaysia	603 5569 3006
DuPont Philippines	632 818 9911
DuPont Australia Ltd	61 2 9923 6111

Europe/Mideast/Africa

DuPont de Nemours (Germany) +49 7146 288460

North/South America

DuPont Canada, Inc 905 821 5912
DuPont do Brasil 55 11 4166 8337

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