

# DuPont™ Zonyl® TEL A-N

## 1-IODO-PERFLUOROALKANE (C6-C12)



DuPont™ Zonyl® TEL A-N is a fluorinated iodide useful in producing high performance repellents and surfactants. Zonyl® TEL A-N provides a narrow distribution of fluorotelomer. It is part of a large family of fluorinated specialty monomers offered by DuPont. For information on other Zonyl® monomers, contact us or visit our website at [www.zonyl.dupont.com](http://www.zonyl.dupont.com).

### Specifications

Property	Limit, wt%	Typical value, wt%
Total Telomers	96.5 min.	99.0
C8F17I	48.0–63.0	53.5
C10F21I	22.0–33.0	28.3
C12F25I + Higher Telomers	10.0–16.5	15.6
C6F13I	4.0 max.	1.7
Perfluorocarbon inerts	2.5 max.	0.9

**Appearance:** clear, violet liquid or semi-solid

### Uses

Zonyl® TEL A-N is a versatile monomer for use in high performance repellents, lubricants and surfactants. Zonyl® TEL A-N provides a convenient means for introducing the perfluoroalkyl group to product formulations. The advantages may include lower surface energy, improved chemical stability and surface lubricity, and enhanced molecular orientation.

Perfluoroalkyl group addition is typically through radical chemistry. In addition, the Zonyl® TEL A-N perfluoroalkyl iodide groups can be oxidized to the corresponding acid fluorides and converted to carboxylic acid derivatives through hydrolysis. Perfluoroalkyl iodides can add across olefins or initiate telomerization reactions. Below are specific uses for Zonyl® TEL A-N and related Zonyl® products:

### 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)
- Spirobiindane 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)

### 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 optical devices (US2003235933)
- Phosphinic acid salts for optical devices (WO2003082884)
- Fluoroalkyl-substituted styrene polymers for gas separation membranes (JP63097215)

## Typical Physical Properties\*

Property	Value
CAS Name	Tetrafluoroethylene Telomer with Iodoperfluoroethane
Other Name	Zonyl® TEL A-N
CAS Number	25398-32-7
Formula	F(CF <sub>2</sub> CF <sub>2</sub> ) <sub>n</sub> -I
Molecular weight	596
Form	Liquid or Semi-solid
Color	Purple
Odor	Slightly Acid, Iodine
Boiling Point	115–240°C (239–464°F)
Fluorine, %	60.6
Specific Gravity	1.8 at 45°C
Thickening Point	35–50°C
Viscosity, cP/°C	10/65
Flash Point	Self Extinguishing

\* This table gives typical properties (not specifications) based on historical production performance. DuPont does not make any express or implied warranty that this product will continue to have these typical properties.

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K-xxxx (05/07) Printed in the U.S.A.

## Handling

Zonyl® TEL A-N 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 sheet for further handling information.

## Packaging and Shipping Information

Zonyl® TEL A-N is available in net:

- 18.16 kg (40 lb) pails
- 199.76 kg (440 lb) steel drums
- 250 kg (550.661 lb) steel drums
- Bulk isotank

Proper Shipping Name: Corrosive Liquid, Acidic, Organic, N.O.S. (Contains Hydrofluoric Acid and Antimony Pentafluoride)

Hazard Class: 8                      UN No.: 3265  
Packing Group: II                      DOT/IMO Label: Corrosive

## Contact Us

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

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