Product Information

ISOFORM™ Isomerization Grade/ Reforming Grade

Refining Grades of Perchloroethylene

Introduction

In the petroleum refining industry, most platinum-based catalysts used in catalytic reformer and isomerization units, as well as the isomerization units in natural gas liquid (NGL) plants, require small amounts of chlorine to maintain catalyst activity and stability. Regulatory requirements (like The Montreal Protocol and the U.S. Clean Air Act of 1990), as well as handling and packaging concerns, have made use of ethylene dichloride (EDC), 1,1,1-trichloroethane and carbon tetrachloride unattractive in these applications. Olin offers two products as chlorine sources to the refinery industry: ISOFORM™ Isomerization Grade Perchloroethylene and ISOFORM Reforming Grade Perchloroethylene.

- No ozone depletion
- Non-flammable
- Long-term viability
- Readily available
- No federal excise tax in some countries (e.g. U.S.)
- Available through approved distribution

ISOFORM™ Isomerization Grade Perchloroethylene

ISOFORM Isomerization Grade Perchloroethylene is offered as a preferred product for the isomerization process. This product contains no sulfide compounds and only traces of water and oxygen/nitrogen compounds (see specification). ISOFORM Isomerization Grade Perchloroethylene fulfills the UOP (Butamer and Penex Isomerization process) as well as the AXENS specification requirements.

Manufacturing and Availability

Olin manufactures ISOFORM™ Isomerization Grade Perchloroethylene in Plaquemine, Louisiana (U.S.), and Stade, Germany. Bulk shipments are available either directly from Olin or through an approved Olin distributor.

In Europe, the bulk distribution business is only allowed by third parties; bulk storage by distributors is not permitted.

In North America, approved distributors are not authorized to make less than full truckload bulk shipments from stock.

ISOFORM™ Isomerization Grade Perchloroethylene is also available in Olin factory-packed drums. Repacking by distributors is not allowed.

ISOFORM™ Reforming Grade Perchloroethylene

ISOFORM™ Reforming Grade Perchloroethylene is offered as a preferred product for chloriding reforming catalyst. This product contains no sulfide compounds and only traces of water and oxygen/nitrogen-containing compounds (see specification). ISOFORM™ Reforming Grade is not suitable for isomerization units.

Manufacturing and Availability

ISOFORM™ Reforming Grade Perchloroethylene is manufactured in Plaquemine, Louisiana (U.S.), and Stade, Germany. This product is available in bulk or drums directly from Olin or from approved Olin distributors.

Properties

Property[1]	Isomerization Grade	Reforming Grade
Purity, %	99.95	99.95
Color, Pt-Co	<10	<10
Appearance	Clear and free of suspended matter	Clear and free of suspended matter
Non-Volatile Residue (ppm)	<10	<10
Water (ppm)	<25	<30
Chlorides (ppm)	<1	<1
Additive Stabilizer (ppm)	<10	>20
Organically Bound Oxygen+Nitrogen (ppm)	<5	<25
Formula	$Cl_2C + CCl_2$	Cl_2C+CCl_2
Density 25°C	1619g/L (13.51lb/gal)	1619g/L (13.51lb/gal)
Boiling Point	121°C (250°F)	121°C (250°F)
Freezing Point	-23°C (-9°F)	-23°C (-9°F)
Flammable Limits	None	None
Flash Point	None	None
Vapor Pressure 20°C (mbar)	18.7	18.7

[1]Values should be considered as typical properties; consult Sales Specification for details.

ISOFORM™ Comparisons

Due to differences in chlorine content between formerly used chloride source and ISOFORM™ Perchloroethylene (either grade), some adjustment of catalyst chloriding rates will be required. The following chart helps to determine chlorine equivalencies for different products.

Chemical	pbw[2] Chlorine / pbw Solvent[3]	pbw Solvent / pbw Chlorine
ISOFORM[4]	0.855	1.17
Carbon Tetrachloride	0.922	1.08
1,1,1-Trichloroethane	0.797	1.25
Ethylene Dichloride	0.717	1.40

[2]pbw = parts by weight.
[3]Theoretical limits, assuming pure chemicals.
[4]Isomerization Grade and Reforming Grade Perchloroethylene.

Note: Suitability of the solvent should be confirmed with the catalyst manufacturer or the process licenser.

ISOFORM™ Storage and Handling

For ISOFORM Isomerization Grade Perchloroethylene, nitrogen padding of storage tanks is recommended. For more information on the storage and handling recommendations of ISOFORM Grades Perchloroethylene and chlorinated solvents in general, as well as for information on groundwater protection and emission minimization, review the Safety Data Sheet and see the Chlorinated Solvents Product Stewardship Manual. Be sure to comply with the country-specific and local requirements.

Product Stewardship

When considering the use of any Olin products in a particular application, you should review the latest Safety Data Sheets from Olin and ensure that they are intended for safe use. For Safety Data Sheets and other product safety information, contact Olin. Before handling any other products mentioned in the text, you should obtain available product safety information and take necessary steps to ensure safety of use.

No chemical should be used as or in a food, drug, medical device, or cosmetic, or in a product or process in which it may contact a food, drug, medical device, or cosmetic until the user has determined the suitability and legality of the use. Since government regulations and use conditions are subject to change, it is the user's responsibility to determine that this information is appropriate and suitable under current, applicable laws and regulations.

Olin requests that the customer read, understand, and comply with the information contained in this publication and the current Safety Data Sheet(s). The customer should furnish the information in this publication to its employees, contractors and customers, or any other users of the product(s), and request that they do the same.

For more information, visit our web site at www.olinchlorinatedorganics.com.

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.