



ISOFORM Isomerization Grade / Reforming Grade Refining Grades of Perchloroethylene

Application

In 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. Dow offers two products as chlorine sources to the refinery industry: ISOFORM* Isomerization Grade Perchloroethylene and ISOFORM Reforming Grade Perchloroethylene.

Anticipated Advantages to Using ISOFORM

- No Ozone Depletion
- Non-Flammable
- Long Term Viability
- Readily Available
- No Federal Exercise 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

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

In Europe, the bulk distribution business is only allowed to 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 Dow 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.A) and Stade, Germany. This product is available in bulk or drums directly from Dow or from approved Dow 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 ₂ C =CCl ₂	Cl ₂ C=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 licensor.

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 Material Safety Data Sheet and see the Chlorinated Solvents Product Stewardship Manual. Be sure to comply with the country specific and local requirements.

Contact Information:

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 Europe: 800-3-694-6367
 Or 32-3-450-2240
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