



**SOLVAY**

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# Rhodiasolv® Polarclean

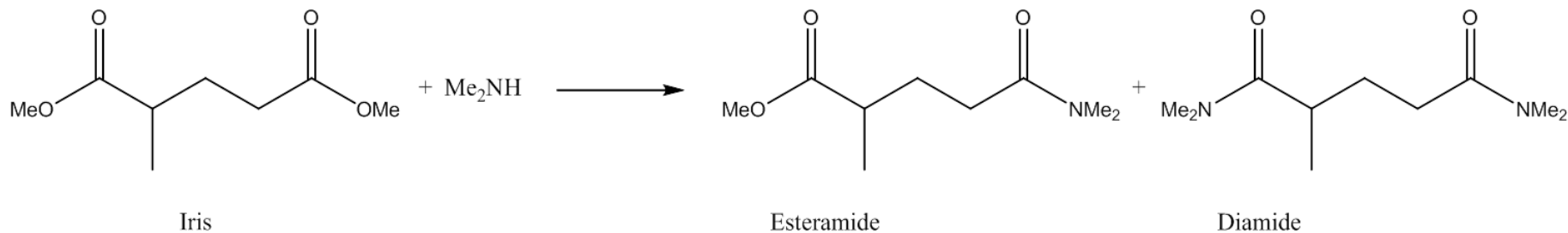
# Rhodiasolv® PolarClean

Rhodiasolv® PolarClean is part of a new range of sustainable solvent technologies and solvent formulations from Rhodia

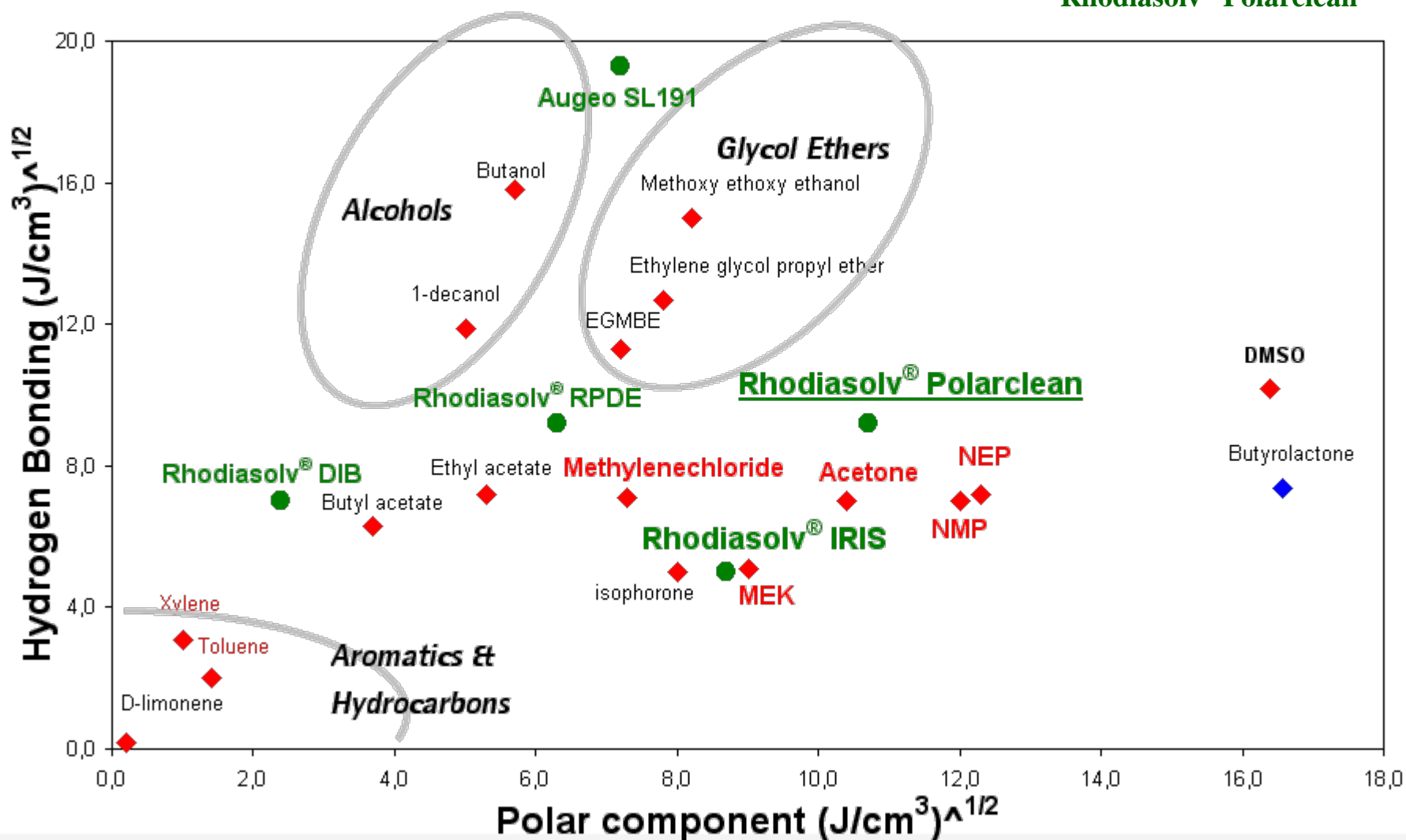
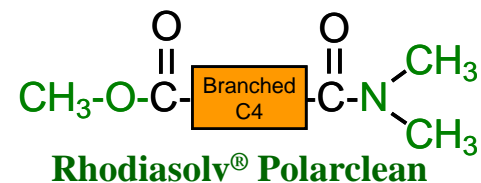
- A Novel Commercial technology with production in EU and Asia
- Polar and water soluble
- Solvency Profile similar to NMP, NEP and ADMAs
- Excellent toxicological & ecotoxicological profiles
- Non-VOC and Non-flammable
- Based on Rhodia raw material → Reduced carbon foot print
- REACH compliant

# Rhodiasolv® PolarClean Chemistry




- Purity: > 98 %
- Mixture of esteramide and diamide, ratio = 20



# Hansen Parameters



# Physico-chemical properties comparison

	NMP	Rhodiasolv® Polarclean
IUPAC Name	N-methylpyrrolidinone	Pentanoic acid, 5-(dimethylamino)-2-methyl-5-oxo-,methyl ester
Appearance	Clear, colorless to slightly yellow	Clear, colorless to yellow liquid
Odor	Slight amine odor	Slight odor
Solubility	Soluble in water	Soluble in water
Boiling Point	202°C	280°C
Melting Point	-24°C	<-60°C
Flash Point	86°C	146°C
Vapour Pressure	40 Pa @ 25°C	1 Pa @ 25°C
Evaporation rate	0.06 (BuAc=1)	0.002 (BuAc=1)
Density	1.028 at 20°C	1.043 at 20°C
GHS	  Danger	 Warning
OSHA Hazards	May damage the unborn child, May cause respiratory irritation, skin irritation, serious eyes irritation,	Serious eyes irritation,
VOC 2004/42/EC	VOC	No VOC
Biodegradability	Readily Biodegradable (301F)	Inherent Biodegradable (302B)

# Rhodiasolv<sup>®</sup> PolarClean is easy-to-use and to-handle



## Physical Properties of Rhodiasolv<sup>®</sup> PolarClean

Molar Mass	187.8
Refractive index, n <sub>D</sub> at 20°C	1.4610 ± 0.0005
Density at 20°C	1.0148 ± 0.001 g/cm <sup>3</sup>
Surface tension	36.3 ± 0.3 mN/m
Boiling point (1013 hPa)	280 ± 2°C
Vapor pressure (20°C)	< 0.001 Pa
Dynamic viscosity (23°C)	9.82 ± 0.02 mPa.s
Freezing point	< - 60°C
Evaporation rate (at 50°C)	0.0017 ± 0.0003 (n-butyl acetate = 1)
Flash point	145 ± 1°C (Closed cup)
Solubility at 23°C - 50/50 v/v in water	Miscible



# Rhodiasolv® PolarClean has a good environmental profile

STUDY	GUIDELINE	RESULT
Acute Daphnia immobilisation	OECD 202	CE50 (48h) > 100mg/l
Algal growth test	OECD 201	CE50 (72h) > 100mg/l
Acute toxicity on fish	OECD 203	LC50 (96h) > 100mg/l
Ready biodegradation dosed bottle	OECD 301F	Inherently biodegradable
Inherent biodegradation	OECD 302B	OK 96% in 28 days
Acute skin irritation in vivo	OECD 404	Not irritant
Acute eye irritation in vitro (BCOP test)	OECD 437	Not R41
Acute eye irritation in vivo	OECD 405	Classified as R36
Skin sensitization (local lymph node assay)	OECD 429	Not sensitizing
Acute oral toxicity in the rat	OECD 423	> 2000 mg/Kg
Gene mutation in bacteria (Ames test)	OECD 471	Not mutageni