## **CHEMICAL SAFETY REPORT**

Part B

Vacuum Gas Oils, Hydrocracked Gas Oils, and Distillate Fuels

Prepared by: CONCAWE

## 9. EXPOSURE ASSESSMENT

### Table 9.1. Identified Use Description and Exposure Scenario Number Key

IU	Category	Identified Use Name	Sector	ES Number	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Article Category (AC)	Environmental Release Category (ERC)	Specific Environmental Release Category (SpERC)
1	Vacuum gas oils, hydrocracked gas oils and distillate fuels	01 – Manufacture of Substance	Industrial	ES 9.1.1	3, 8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	NA	1, 4	ESVOC SpERC 1.1.v1
2	Vacuum gas oils, hydrocracked gas oils and distillate fuels	01b – Use of Substance as Intermediate	Industrial	ES 9.2.1	3, 8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	NA	6a	ESVOC SpERC 6.1a.v1
3	Vacuum gas oils, hydrocracked gas oils and distillate fuels	01a – Distribution of Substance	Industrial	ES 9.3.1	3	NA	1, 2, 3, 4, 8a, 8b, 9, 15	NA	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	ESVOC SpERC 1.1b.v1
4	Vacuum gas oils, hydrocracked gas oils and distillate fuels	02 – Formulation & (Re)packing of Substances and Mixtures	Industrial	ES 9.4.1	3, 10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	NA	2	ESVOC SpERC 2.2.v1
5	Vacuum gas oils, hydrocracked gas oils and distillate fuels	03a – Uses in Coatings: Industrial	Industrial	ES 9.5.1	3	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	NA	4	ESVOC SpERC 4.3a.v1
6	Vacuum gas oils, hydrocracked gas oils and distillate fuels	03b – Uses in Coatings: Professional	Professional	ES 9.6.1	22	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	NA	8a, 8d	ESVOC SpERC 8.3b.v1

7	Vacuum gas oils, hydrocracked gas oils and distillate fuels	05a – Use in Oil and Gas Field Drilling and Production Operations: Industrial	Industrial	ES 9.7.1	3	NA	1, 2, 3, 4, 8a, 8b	NA	4	QUALITATIVE ASSESSMENT FOR ENVIRONMENT
8	Vacuum gas oils, hydrocracked gas oils and distillate fuels	05b – Use in Oil and Gas field drilling and production operations: Professional	Professional	ES 9.8.1	22	NA	1, 2, 3, 4, 8a, 8b	NA	8d	QUALITATIVE ASSESSMENT FOR ENVIRONMENT
9	Vacuum gas oils, hydrocracked gas oils and distillate fuels	06a – Lubricants: Industrial	Industrial	ES 9.9.1	3	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18	NA	4, 7	ESVOC SpERC 4.6a.v1
10	Vacuum gas oils, hydrocracked gas oils and distillate fuels	06b – Lubricants: Professional (Low Release)	Professional	ES 9.10.1	22	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13, 17, 18, 20	NA	9a, 9b	ESVOC SpERC 9.6b.v1
11	Vacuum gas oils, hydrocracked gas oils and distillate fuels	06c – Lubricants: Professional (High Release)	Professional	ES 9.11.1	22	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13, 17, 18, 20	NA	8a, 8d	ESVOC SpERC 8.6c.v1
12	Vacuum gas oils, hydrocracked gas oils and distillate fuels	07a – Use in Metal Working Fluids / Rolling Oils: Industrial	Industrial	ES 9.12.1	3	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17	NA	4	ESVOC SpERC 4.7a.v1
13	Vacuum gas oils, hydrocracked gas oils and distillate fuels	10a – Use as Release Agents or Binders: Industrial	Industrial	ES 9.13.1	3	NA	1, 2, 3, 4, 6, 7, 8b, 10, 13, 14	NA	4	ESVOC SpERC 4.10a.v1
14	Vacuum gas oils, hydrocracked gas oils and distillate fuels	10b – Use as Release Agents or Binders: Professional	Professional	ES 9.14.1	22	NA	1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14	NA	8a, 8d	ESVOC SpERC 8.10b.v1

15	Vacuum gas oils, hydrocracked gas oils and distillate fuels	12a – Use as a Fuel: Industrial	Industrial	ES 9.15.1	3	NA	1, 2, 3, 8a, 8b, 16	NA	7	ESVOC SpERC 7.12a.v1
16	Vacuum gas oils, hydrocracked gas oils and distillate fuels	12b – Use as a Fuel: Professional	Professional	ES 9.16.1	22	NA	1, 2, 3, 8a, 8b, 16	NA	9a, 9b	ESVOC SpERC 9.12b.v1
17	Vacuum gas oils, hydrocracked gas oils and distillate fuels	12c – Use as a Fuel: Consumer	Consumer	ES 9.17.1	21	13	NA	NA	9a, 9b	ESVOC SpERC 9.12c.v1
18	Vacuum gas oils, hydrocracked gas oils and distillate fuels	13a – Use as Functional Fluids: Industrial	Industrial	ES 9.18.1	3	NA	1, 2, 3, 4, 8a, 8b, 9	NA	7	ESVOC SpERC 7.13a.v1
19	Vacuum gas oils, hydrocracked gas oils and distillate fuels	15 – Use in Road and Construction Applications: Professional	Professional	ES 9.19.1	22	NA	8a, 8b, 9, 10, 11, 13	NA	8d, 8f	ESVOC SpERC 8.15.v1
20	Vacuum gas oils, hydrocracked gas oils and distillate fuels	18b – Explosives Manufacture & Use: Professional	Professional	ES 9.20.1	22	NA	1, 3, 5, 8a, 8b	NA	8e	ERC DEFINED RELEASE FRACTIONS
21	Vacuum gas oils, hydrocracked gas oils and distillate fuels	19 – Rubber Production and processing: Industrial	Industrial	ES 9.21.1	3, 10, 11	NA	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21	NA	1, 4, 6d	ESVOC SpERC 4.19.v1

The process of mapping uses and characterising risks has often identified a series of supporting measures that may further contribute to the management of exposure. The measures are identified in *blue* text in the Appendices contained in section 10. These measures are not contained within the Exposure Scenarios (ES) as they do not need to be implemented in order to achieve satisfactory exposure control. However, they are identified within the CSA in order that stakeholders are able to benefit from access to other exposure control information that has been obtained during the process of CSA/ES development.

# 9.1. Manufacture of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

## 9.1.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Manufacture of Substance		
Use Descriptor		
Sector(s) of Use		3, 8, 9
Process Categories		1, 2, 3, 4, 8a, 8b, 15
Ũ		Further information on the mapping and allocation of
		PROC codes is contained in Table 9.1
Environmental Release Cate	egories	1, 4
Specific Environmental Rele	ase Category	ESVOC SpERC 1.1.v1
Processes, tasks, activitie	s covered	
Manufacture of the substance	e or use as a proce	ess chemical or extraction agent. Includes recycling /
recovery, material transfers,	storage, sampling,	associated laboratory activities, maintenance and
loading (including marine ve	ssel/barge, road/rai	l car and bulk container).
Assessment Method		
See Section 3.		
Section 2 Operational con	ditions and risk m	anagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated
in product	differently) G13	
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2
use/exposure		
Other Operational	Operation is carrie	d out at elevated temperature (> 20°C above ambient
Conditions affecting	temperature). OC7	. Assumes a good basic standard of occupational
exposure	hygiene is impleme	ented G1.
Contributing Scenarios	Specific Risk Mar	agement Measures and Operating Conditions
General measures	Control any potent	al exposure using measures such as contained
applicable to all activities	systems, properly	designed and maintained facilities and a good standard
CS135	of general ventilation	on. Drain down systems and transfer lines prior to
	breaking containm	ent. Drain down and flush equipment where possible
	prior to maintenand	ce.
	Where there is pot	ential for exposure: Ensure relevant staff are informed
	of exposure potent	ial and aware of basic actions to minimise exposures;
	ensure suitable pe	rsonal protective equipment is available; clear up spills
	and dispose of was	ste in accordance with regulatory requirements; monitor
	effectiveness of co	ntrol measures; provide regular health surveillance as
	appropriate; identif	y and implement corrective actions. G25
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect
initants) G19	skin contact. Wear	gioves (lested to EIN3/4) IT hand contact with
	substance likely. C	lean up contamination/spills as soon as they occur.
	training to provent	minimized and the report any skip offecte
	that may dovelop	
General exposures (Closed	Handle substance	within a closed system E17
systems) CS15		WILINI A GUSCU SYSICIII L41

General exposures (Open	Wear suitable gloves tested to EN374 PPE1	5				
Process Sampling CS2	ng CS2 No other specific measures identified EI20					
Bulk closed loading and	closed loading and Handle substance within a closed system E47 Wear suitable gloves					
unloading CS501	tested to EN374 PPE15					
Bulk open loading and unloading CS503	Ik open loading and Wear suitable gloves tested to EN374 PPE15					
Equipment cleaning and	Drain down system prior to equipment break	-in or maintenance. E65.				
maintenance CS39	Wear chemically resistant gloves (tested to I	=N3/4) in combination with				
Laboratory activities CS36	No other specific measures identified EI20					
Bulk storage CS85	Store substance within a closed system E84	4				
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is				
contained in Appendices 2	? to 3					
Section 2.2 Control of env	ironmental exposure					
Product characteristics						
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	].				
Amounts used						
Fraction of EU tonnage used	l in region	0.1				
Regional use tonnage (tonne	es/year)	2.8e7				
Fraction of Regional tonnage	e used locally	0.021				
Annual site tonnage (tonnes	/year)	6.0e5				
Maximum daily site tonnage	(kg/day)	2.0e6				
Frequency and duration of	use					
Continuous release [FD2].						
Emission days (days/year)		300				
Environmental factors not	influenced by risk management					
Local freshwater dilution fact	tor	10				
Local marine water dilution f	Local marine water dilution factor 100					
Other given operational co	onditions affecting environmental exposur	e				
Release fraction to air from p	process (initial release prior to RMM)	1.0e-2				
Release fraction to wastewa RMM)	ter from process (initial release prior to	3.0e-5				
Release fraction to soil from	process (initial release prior to RMM)	0.0001				
Technical conditions and r	measures at process level (source) to prev	vent release				
Common practices vary acro	oss sites thus conservative process release e	stimates used [TCS1].				
Technical onsite condition releases to soil	is and measures to reduce or limit discha	ges, air emissions and				
Risk from environmental exp	oosure is driven by freshwater sediment [TCR	(1b].				
Prevent discharge of undissolved substance to or recover from onsite wastewater [TCR14].						
If discharging to domestic se	wage treatment plant, no onsite wastewater	treatment required [TCR9].				
Treat air emission to provide a typical removal efficiency of (%)     90						
Freat onsite wastewater (prior to receiving water discharge) to provide 90.3						
ne required removal efficiency $\geq$ (%)						
Tuischarging to domestic sewage treatment plant, provide the required $U$						
Onside wastewater removal enrorency of $\geq (\%)$						
Organisation measures to prevent/innit release if om site Prevent discharge of undiscolved substance to or recover from wastewater (OMS1). Do not apply						
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed						
Conditions and measures	related to municipal sewage treatment pla	Int				
Estimated substance remova treatment (%)	al from wastewater via domestic sewage	94.1				

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1
Maximum allowable site tonnage ( $M_{Safe}$ ) based on release following total wastewater treatment removal (kg/d)	3.3e6
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	10000
Conditions and measures related to external treatment of waste for o	disposal
During manufacturing no waste of the substance is generated to treat [ET	W4].
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated to recover	[ERW2].
Additional information on the basis for the allocation of the indentifi contained in PETRORISK file.	ied OCs and RMMs is
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposures G21.	unless otherwise indicated.
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk
model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scenari	io
4.1. Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Measures/Operational Conditions outlined in Section 2 are implemented.	Risk Management G22.
Where other Risk Management Measures/Operational Conditions are add	opted, then users should
ensure that risks are managed to at least equivalent levels. G23.	
Available hazard data do not enable the derivation of a DNEL for dermal i	irritant effects. G32. Available
hazard data do not support the need for a DNEL to be established for oth	er health effects. G36. Risk
Management Measures are based on qualitative risk characterisation. G3	37.
4.2. Environment	
Guidance is based on assumed operating conditions which may not be ap scaling may be necessary to define appropriate site-specific risk manager Required removal efficiency for wastewater can be achieved using onsite alone or in combination [DSU2]. Required removal efficiency for air can be technologies, either alone or in combination [DSU3]. Further details on so technologies are provided in SpERC factsheet ( <u>http://cefic.org/en/reach-fr</u> Scaled assessments for EU refineries have been performed using site-sp in PETRORISK file attached to IUCLID section 13 – "Site-Specific Produc refinery sites where scaling revealed a condition of unsafe use (i.e., RCR chemical safety assessment was required [DSU8]. Taking into account th monitoring evaluation on benzene included as the Tier 2 analysis in the L category, the default "Air Removal Efficiency" of 90 % included in the SPE over-conservative and that 95 % efficiency can safely be claimed in a Tie the Tier 2 analysis demonstrates that no refineries have RCRs>1 (see PE section 13 – "Tier 2 Site Specific Production worksheet").	pplicable to all sites; thus, ment measures [DSU1]. /offsite technologies, either be achieved using onsite caling and control <u>or-industries-libraries.html</u> ). recific data and are attached ction" worksheet [DSU6]. For s > 1), a site-specific le findings of the air- ow Boiling Point Naphtha ERC has been shown to be r II analysis. On this basis, ETRORISK file in IUCLID

## 9.1.2. Exposure Estimation

9.1.2.1. Human Health See Appendix 2.a and 2.b

#### 9.1.2.2. Environment

## 9.2. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Intermediate – Industrial

## 9.2.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,			
Title					
Use as Substance as Interm	ediate				
Use Descriptor					
Sector(s) of Use		3. 8. 9			
Process Categories		1, 2, 3, 4, 8a, 8b, 15			
Ū.		Further information on the mapping and allocation of			
		PROC codes is contained in Table 9.1			
Environmental Release Cate	egories	6a			
Specific Environmental Rele	ase Category	ESVOC SpERC 6.1a.v1			
Processes, tasks, activities	s covered				
Use of substance as an inter	rmediate. Includes i	recycling/ recovery, material transfers, storage,			
sampling, associated laborat	tory activities, main	tenance and loading (including marine vessel/barge,			
road/rail car and bulk contair	ner).				
Assessment Method	,				
See Section 3.					
Section 2 Operational con	ditions and risk m	anagement measures			
•		<u> </u>			
Section 2.1 Control of wor	ker exposure				
Product characteristics	•				
Physical form of product	Liquid				
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3</mark> .			
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated			
in product	differently) G13				
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2			
use/exposure					
Other Operational	Operation is carrie	d out at elevated temperature (> 20°C above ambient			
Conditions affecting	temperature). OC7	. Assumes a good basic standard of occupational			
exposure	hygiene is impleme	ented G1.			
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions			
General measures	Control any potent	ial exposure using measures such as contained			
applicable to all activities	systems, properly	designed and maintained facilities and a good standard			
CS135	of general ventilati	on. Drain down systems and transfer lines prior to			
	breaking containm	ent. Drain down and flush equipment where possible			
	prior to maintenand	ce.			
	Where there is pot	ential for exposure: Ensure relevant staff are informed			
	of exposure potent	ial and aware of basic actions to minimise exposures;			
	ensure suitable pe	rsonal protective equipment is available; clear up spills			
	and dispose of was	ste in accordance with regulatory requirements; monitor			
	effectiveness of co	ntrol measures; provide regular health surveillance as			
	appropriate; identif	y and implement corrective actions. G25			
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect			
irritants) G19	SKIN CONTACT. Wear	gioves (tested to EN3/4) it hand contact with			
	substance likely. C	liean up contamination/spills as soon as they occur.			
	vvasn off skin cont	amination immediately. Provide basic employee			
	that may develop	/ minimise exposures and to report any skin effects			
Conorol ovrocursos (Olassat	Landle externe	EJ within a closed system E47			
		within a closed system E47			
systems) 68 15					

General exposures (Open systems) CS16	eneral exposures (Open Wear suitable gloves tested to EN374 PPE15					
Process Sampling CS2	No other specific measures identified EI20					
Bulk closed loading and	Handle substance within a closed system E47 Wear suitable gloves					
unloading CS501	tested to EN374 PPE15					
Bulk open loading and unloading CS503	Wear suitable gloves tested to EN374 PPE1	5				
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break Wear chemically resistant gloves (tested to 'basic' employee training. PPE16	k-in or maintenance. E65. EN374) in combination with				
Laboratory activities CS36	No other specific measures identified EI20					
Bulk storage CS85	Store substance within a closed system. E8	4				
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is				
contained in Appendices 2	2 to 3					
Section 2.2 Control of env	vironmental exposure					
Product characteristics						
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	].				
Amounts used						
Fraction of EU tonnage used	d in region	0.1				
Regional use tonnage (tonne	es/year)	3.5e5				
Fraction of Regional tonnage	e used locally	0.043				
Annual site tonnage (tonnes	/year)	1.5e4				
Maximum daily site tonnage	5.0e4					
Frequency and duration of	fuse					
Continuous release [FD2].						
Emission days (days/year)		300				
Environmental factors not	influenced by risk management					
Local freshwater dilution fac	tor	10				
Local marine water dilution f	actor	100				
Other given operational co	onditions affecting environmental exposur	e				
Release fraction to air from	process (initial release prior to RMM)	1.0e-3				
Release fraction to wastewa RMM)	ter from process (initial release prior to	3.0e-5				
Release fraction to soil from	process (initial release prior to RMM)	0.001				
Technical conditions and	measures at process level (source) to pre	vent release				
Common practices vary acro	oss sites thus conservative process release e	estimates used [TCS1].				
Technical onsite condition	is and measures to reduce or limit discha	rges, air emissions and				
releases to soil		N461				
Risk from environmental exp Prevent discharge of undiss	olved substance to or recover from onsite wa	(ID]. Istewater [TCR1/1]				
If discharging to domestic se	ewage treatment plant, no onsite wastewater	treatment required [TCR9].				
Treat air emission to provide	e a typical removal efficiency of (%)	80				
Freat onsite wastewater (prior to receiving water discharge) to provide 51.6						
he required removal efficiency $\geq$ (%)						
f discharging to domestic sewage treatment plant, provide the required 0						
onsite wastewater removal efficiency of $\geq$ (%)						
Organisation measures to	prevent/limit release from site	or [OMS1] Do not apply				
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].						
Conditions and measures related to municipal sewage treatment plant						
Estimated substance remove treatment (%)	al from wastewater via domestic sewage	94.1				

Total efficiency of removal from wastewater after onsite and offsite	94.1			
(domestic treatment plant) RMMs (%)				
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	4.1e5			
wastewater treatment removal (kg/d)				
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000			
Conditions and measures related to external treatment of waste for	disposal			
This substance is consumed during use and no waste of the substance is	generated to treat [ETW5].			
Conditions and measures related to external recovery of waste				
This substance is consumed during use and no waste of the substance is	generated to recover			
[ERW3].				
Additional information on the basis for the allocation of the indentifi	ed OCs and RMMs is			
contained in PETRORISK file.				
Section 3 Exposure Estimation				
3.1. Health				
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.				
G21.				
3.2. Environment				
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk			
model [EE2].				
Section 4 Guidance to check compliance with the Exposure Scenar	0			
4.1. Health				
Predicted exposures are not expected to exceed the DN(M)EL when the	Risk Management			
Measures/Operational Conditions outlined in Section 2 are implemented.	G22.			
Where other Dick Management Maggures (Onerstianal Conditions are ad	anted then users should			
where other Risk Management Measures/Operational Conditions are adopted, then users should				
ensule that fisks are managed to at least equivalent levels. 625.				
Available bazard data do not enable the derivation of a DNFL for dermal	irritant effects G32 Available			
hazard data do not support the need for a DNEL to be established for oth	er health effects G36 Risk			
Management Measures are based on gualitative risk characterisation. G	57.			
4.2. Environment				

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

## 9.2.2. Exposure Estimation

9.2.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.2.2.2. Environment

# 9.3. Distribution of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

## 9.3.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,		
Title				
Distribution of Substance				
Use Descriptor				
Sector(s) of Use		3		
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 15		
		Further information on the mapping and allocation of		
		PROC codes is contained in Table 9.1		
Environmental Release Cate	egories	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7		
Specific Environmental Rele	ase Category	ESVOC SpERC 1.1b.v1		
Processes, tasks, activitie	s covered	· · · · · · · · · · · · · · · · · · ·		
Bulk loading (including marir	ne vessel/barge, rai	/road car and IBC loading) and repacking (including		
drums and small packs) of s	ubstance, including	its sampling, storage, unloading, maintenance and		
associated laboratory activiti	es.			
Assessment Method				
See Section 3.				
Section 2 Operational con	ditions and risk m	anagement measures		
· ·		•		
Section 2.1 Control of wor	ker exposure			
Product characteristics				
Physical form of product	Liquid			
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3.</mark>		
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated		
in product	differently) G13			
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2		
use/exposure				
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational		
exposure	hygiene is impleme	ented G1.		
Contributing Scenarios	Specific Risk Mar	agement Measures and Operating Conditions		
General measures	Control any potent	al exposure using measures such as contained		
applicable to all activities	systems, properly of	designed and maintained facilities and a good standard		
CS135	of general ventilation	on. Drain down systems and transfer lines prior to		
	breaking containm	ent. Drain down and flush equipment where possible		
	prior to maintenand	ce.		
	Where there is pot	ential for exposure: Ensure relevant staff are informed		
	of exposure potent	al and aware of basic actions to minimise exposures;		
	ensure suitable per	rsonal protective equipment is available; clear up spills		
	and dispose of was	ste in accordance with regulatory requirements; monitor		
	enectiveness of co	nuor measures, provide regular nearth surveinance as		
Conoral maggurog (akin	Avoid direct skip of	y and implement corrective actions. G25		
irritante) G19	skin contact Wear	aloves (tested to EN374) if hand contact with		
	substance likely. C	lean up contamination/spills as soon as they occur		
	Wash off skin cont	amination immediately. Provide basic employee		
	training to prevent	/ minimise exposures and to report any skin effects		
	that may develop.	E3		
General exposures (Closed	Handle substance	within a closed system E47		
systems) CS15		-		

General exposures (Open systems) CS16	pen Wear suitable gloves tested to EN374 PPE15					
Process sampling CS2	g CS2 No other specific measures identified El20					
Laboratory activities CS36	No other specific measures identified EI20					
Bulk closed loading and	Handle substance within a closed system E4	7 Wear suitable gloves				
unloading CS501	tested to EN374 PPE15					
Bulk open loading and	Wear suitable gloves tested to EN374 PPE1	5				
unloading CS503						
Drum and small pack filling CS6	Wear suitable gloves tested to EN374 PPE1	5				
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break Wear chemically resistant gloves (tested to E 'basic' employee training. PPE16	-in or maintenance. E65. EN374) in combination with				
Storage CS67	Handle substance within a closed system. E	84				
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is				
contained in Appendices 2	? to 3					
Section 2.2 Control of env	ironmental exposure					
Product characteristics	-					
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a]	].				
Amounts used						
Fraction of EU tonnage used	t in region	0.1				
Regional use tonnage (tones	s/vear)	2 8e7				
Fraction of Regional tonnage	e used locally	0.002				
Annual site tonnage (tonnes	/vear)	5 6e4				
Maximum daily site tonnage	(ka/day)	1 965				
Frequency and duration of		1.365				
	436					
Continuous release [FD2].		200				
Emission days (days/year)	influenced by rick menogement	300				
Environmental factors not	Innuenced by risk management					
Local freshwater dilution fac	tor	10				
Local marine water dilution f	actor	100				
Other given operational co	onditions affecting environmental exposur	e				
Delege for the star for the		4.0-0				
Release fraction to air from p	brocess (initial release prior to RIVIVI)	1.0e-3				
Release fraction to wastewa RMM)	ter from process (initial release prior to	1.0e-6				
Release fraction to soil from	process (initial release prior to RMM)	0.00001				
Technical conditions and r	measures at process level (source) to prev	/ent release				
Common practices vary acro	oss sites thus conservative process release e	stimates used [TCS1].				
Technical onsite condition	s and measures to reduce or limit dischar	ges, air emissions and				
releases to soil						
Risk from environmental exp	Risk from environmental exposure is driven by human via indirect exposure (primarily ingestion)					
[TCR1j] Prevent discharge o	[TCR1j] Prevent discharge of undissolved substance to or recover from onsite wastewater [TCR14].No					
wastewater treatment required [TCR6].						
Treat air emission to provide	a typical removal efficiency of (%)	90				
Treat onsite wastewater (price	or to receiving water discharge) to provide	0				
The required removal efficiency $\geq$ (%)						
discharging to domestic sewage treatment plant, provide the required $0$						
onsite wastewater removal e	Efficiency of $\geq$ (%)					
Organisation measures to	prevent/limit release from site					
Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].						
Conditions and measures	related to municipal sewage treatment pla	int				
	i					

L

Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1				
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1				
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	2.9e6				
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000				
Conditions and measures related to external treatment of waste for	disposal				
External treatment and disposal of waste should comply with applicable r	egulations [ETW3].				
Conditions and measures related to external recovery of waste					
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].				
Additional information on the basis for the allocation of the indentific contained in PETRORISK file.	ied OCs and RMMs is				
Section 3 Exposure Estimation					
3.1. Health					
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated.				
G21.					
3.2. Environment					
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk					
model [EE2].					
Section 4 Guidance to check compliance with the Exposure Scenario					
4.1. Health					
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management					

Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

#### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

### 9.3.2. Exposure Estimation

#### 9.3.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.3.2.2. Environment

## 9.4. Formulation & (Re)packing of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

## 9.4.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Formulation & (Re)packing of Substances and Mixtures			
Use Descriptor			
Sector(s) of Use		3. 10	
Process Categories		1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	
		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	2	
Specific Environmental Rele	ase Category	ESVOC SpERC 2.2.v1	
Processes, tasks, activitie	s covered		
Formulation, packing and re-	-packing of the sub	stance and its mixtures in batch or continuous	
operations, including storage	e. materials transfer	s, mixing, tabletting, compression, pelletization.	
extrusion, large and small so	ale packing, maint	enance, sampling and associated laboratory activities	
Assessment Method	<b>J</b> ,		
See Section 3			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
annlicable to all activities	systems properly	designed and maintained facilities and a good standard	
CS135	of general ventilati	on Drain down systems and transfer lines prior to	
00100	breaking containm	ent. Drain down systems and transfer lines phor to	
	Invior to maintenance		
	Where there is not	ential for exposure. Ensure relevant staff are informed	
	of exposure potent	ial and aware of basic actions to minimise exposures.	
	ensure suitable pe	rsonal protective equipment is available: clear up spills	
	and dispose of waste in accordance with regulatory requirements: monitor		
	effectiveness of control measures: provide regular health surveillance as		
	appropriate; identif	v and implement corrective actions. G25	
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect	
irritants) G19	skin contact. Wear	gloves (tested to EN374) if hand contact with	
,	substance likelv. C	lean up contamination/spills as soon as they occur.	
	Wash off skin contamination immediately. Provide basic employee		
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop.	E3	

General exposures (closed systems) CS15	Handle substance within a closed system E	E47	
General exposures (open systems) CS16	Wear suitable gloves tested to EN374 PPE15		
Process sampling CS2	No other specific measures identified EI20		
Drum and batch transfers CS8	Use drum pumps or carefully pour from container E64 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16		
Bulk transfers CS14	Handle substance within a closed system E tested to EN374 PPE15	47 Wear suitable gloves	
Mixing operations (open systems) CS30	Provide extract ventilation to points where c chemically resistant gloves (tested to EN37 employee training PPE16	emissions occur <mark>E54</mark> Wear 74) in combination with 'basic'	
Production or preparation or articles by tabletting, compression, extrusion or pelletisation CS100	Wear suitable gloves tested to EN374 PPE15		
Drum and small package filling <mark>CS8</mark>	Wear suitable gloves tested to EN374 PPE	15	
Laboratory activities CS36	No other specific measures identified EI20		
Equipment clean down and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16		
Storage CS67	Store substance within a closed system.	84	
Additional information on	the basis for the allocation of the identifi	ed OCs and RMMs is	
Contained in Appendices 2	irenmentel expective		
Section 2.2 Control of env	nronmental exposure		
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4]	a].	
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonne	es/year)	2.8e7	
Fraction of Regional tonnage	age used locally 0.0011		
Annual site tonnage (tonnes	site tonnage (tonnes/vear) 3 0e4		
Maximum daily site tonnage	(kg/dav)	1.0e5	
Frequency and duration of	fuse	1.000	
Continuous release [ED2]			
Emission days (days/year)		300	
Environmental factors not	influenced by risk management	300	
Local freebuctor dilution fee	tor	10	
Local marine water dilution fac	lui	10	
Other given energianal as	acion	100	
Other given operational co	situations affecting environmental exposi-		
Release fraction to air from p consistent with EU Solvent F	process (after typical onsite RMMs, Emissions Directive requirements)	1.0e-2	
Release fraction to wastewater from process (initial release prior to 2.0e-5		2.0e-5	
Release fraction to soil from	process (initial release prior to RMM)	0.0001	
Technical conditions and	measures at process level (source) to pro	event release	
Common practices vary acro	oss sites thus conservative process release	estimates used ITCS11.	
Technical onsite condition	is and measures to reduce or limit discha	arges, air emissions and	
Dick from onvironmental aver	ocuro is drivon by freebylater adiment ITC	P1b1	
Prevent discharge of undisc	olved substance to or recover from onsite w	n ivj. astewater [TCR1/1	
If discharging to domestic se	ewage treatment plant, no onsite wastewate	r treatment required ITCR91	
Treat air emission to provide	a typical removal efficiency of (%)	0	

Treat onsite wastewater (prior to receiving water discharge) to provide	59.9	
the required removal efficiency $\geq$ (%)	0	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	U	
Organisation measures to prevent/limit release from site		
Prevent discharge of undissolved substance to or recover from wastewate	er [OMS1]. Do not apply	
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, o [OMS3].	contained or reclaimed	
Conditions and measures related to municipal sewage treatment pla	Int	
· · · ·		
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	6.8e5	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000	
Conditions and measures related to external treatment of waste for	disposal	
External treatment and disposal of waste should comply with applicable re	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].	
Additional information on the basis for the allocation of the indentifi	ed OCs and RMMs is	
contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [FE2]		
Section 4 Guidance to check compliance with the Exposure Scenario		
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the	Risk Management	
Measures/Operational Conditions outlined in Section 2 are implemented.	G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should		
ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available		
hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk		
Management Measures are based on qualitative risk characterisation. Ga	37.	
4.2. Environment		
Scaling may be necessary to define appropriate site-specific risk manager Required removal efficiency for wastewater can be achieved using onsite alone or in combination [DSU2]. Required removal efficiency for air can be technologies, either alone or in combination [DSU3]. Further details on so technologies are provided in SpERC factsheet ( <u>http://cefic.org/en/reach-fu</u>	pplicable to all sites; thus, ment measures [DSU1]. /offsite technologies, either be achieved using onsite caling and control <u>or-industries-libraries.html</u> )	
[DSU4].		

## 9.4.2. Exposure Estimation

#### 9.4.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.4.2.2. Environment

# 9.5. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) in Coatings R20, R38, R40, R65, R51/53 – Industrial

## 9.5.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Uses in Coatings			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	
Ū.		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	4	
Specific Environmental Rele	ase Category	ESVOC SpERC 4.3a.v1	
Processes, tasks, activities	s covered		
Covers the use in coatings (	paints, inks, adhesi <sup>,</sup>	ves, etc) including exposures during use (including	
materials receipt, storage, pi	eparation and trans	sfer from bulk and semi-bulk, application by spray,	
roller, spreader, dip, flow, flu	idised bed on produ	uction lines and film formation) and equipment	
cleaning, maintenance and a	associated laborato	ry activities.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
·		•	
Section 2.1 Control of wor	ker exposure		
Product characteristics	-		
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3</mark> .	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly designed and maintained facilities and a good standard		
CS135	of general ventilation	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenand	ce.	
	Where there is pot	ential for exposure: Ensure relevant staff are informed	
	of exposure potent	ial and aware of basic actions to minimise exposures;	
	ensure suitable pe	rsonal protective equipment is available; clear up spills	
	and dispose of waste in accordance with regulatory requirements; monitor		
	effectiveness of co	ntrol measures; provide regular health surveillance as	
Conoral magazinas (skis	appropriate; identif	y and implement corrective actions. 625	
General measures (SKIN	AVOID DIFECT SKIN CO	uniaci with product. identity potential areas for indirect	
initants) <mark>G 19</mark>	skin contact. wear	gioves (lested to EIN3/4) II nand contact with	
	Substance likely. C	amination immodiately. Provide basis employee	
	training to provent	amination infineutately. Flovide basic employee	
	that may develop	F3 Other skin protection measures such as impervious	
	suits and face shie	Ids may be required during high dispersion activities	

	which are likely to lead to substantial aerosol release, e.g. spraying. E4		
General exposures (closed	Handle substance within a closed system E47		
Bulk transfers CS14	Handle substance within a closed system E47 Wear suitable gloves tested to EN374 PPE15		
Material transfers; Drum/batch transfers; Transfer from/pouring from containers CS3, CS8, CS22	Wear suitable gloves tested to EN374 PPE15		
Preparation of material for application; Mixing operations (open systems) CS96, CS30	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16		
Film formation - force drying, stoving and other technologies CS99	Handle substance within a closed system E4 general ventilation (not less than 3 to 5 air cl	7 Provide a good standard of nanges per hour) E11.	
Film formation - air drying CS95	Provide a good standard of general ventilation changes per hour) E11.Wear suitable gloves	on (not less than 3 to 5 air s tested to EN374 PPE15	
Spraying (automatic/robotic) <mark>CS97</mark>	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings E60 Wear suitable gloves tested to EN374 PPE15.Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). E11		
Manual spraying CS24	Wear a respirator conforming to EN140 with Type A/P2 filter or better. PPE29 Wear chemically resistant gloves (tested to type EN374) in combination with specific activity training PPE17 Ensure operatives are trained to minimise exposures EI19 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). E11		
Roller, spreader, flow	Wear chemically resistant gloves (tested to EN374) in combination with		
Dipping, immersion and	Wear suitable gloves tested to EN374 PPE15		
Production of preparations or articles by tabletting, compression, extrusion, pelletisation CS100	No other specific measures identified EI20		
Laboratory activities CS36	No other specific measures identified EI20		
Equipment clean down and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16		
Storage CS67	Handle substance within a closed system. E84		
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is	
Section 2.2 Control of env	ironmental exposure		
Product characteristics			
Substance is complex UVCE	3 [PrC3] Predominantly hydrophobic [PrC4a	1.	
Amounts used		1.	
Fraction of ELL tonnade used		0.1	
Regional use tonnage (tonnes/vear) 8 1e3		8 163	
Fraction of Regional tonnage used locally			
Annual site tonnage (tonnes	e tonnage (tonnes/vear) 8 1e3		
Maximum daily site tonnage	(kg/day) 2 7e4		
Frequency and duration of	f lise		
Continuous release IFD21			
Emission days (days/year)			
Environmental factors not influenced by risk management			
Local freshwater dilution fact	tor	10	
Local marine water dilution factor		100	

Other given operational conditions affecting environmental exposure		
Release fraction to air from process (initial release prior to RMM)	0.98	
Release fraction to wastewater from process (initial release prior to RMM)	7.0e-5	
Release fraction to soil from process (initial release prior to RMM)	0	
Technical conditions and measures at process level (source) to pre-	vent release	
Common practices vary across sites thus conservative process release e	stimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit dischar	rges, air emissions and	
releases to soil		
Risk from environmental exposure is driven by humans via indirect exposure (primarily inhalation) [TCR1b]. Prevent discharge of undissolved substance to or recover from onsite wastewater [TCR14].		
Treat air emission to provide a typical removal efficiency of (%)		
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $> (\%)$	58.2	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%)	0	
Organisation measures to prevent/limit release from site		
Prevent discharge of undissolved substance to or recover from wastewat industrial sludge to natural soils [OMS2]. Sludge should be incinerated, c [OMS3].	er [OMS1]. Do not apply contained or reclaimed	
Conditions and measures related to municipal sewage treatment pla	ant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	1.4e5	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000	
Conditions and measures related to external treatment of waste for disposal		
External treatment and disposal of waste should comply with applicable r	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable regulations [ERW1].		
Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].		
Section 4 Guidance to check compliance with the Exposure Scenario		
4.1. Health		
Measures/Operational Conditions outlined in Section 2 are implemented.	G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.		
4.2. Environment		

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

## 9.5.2. Exposure Estimation

#### 9.5.2.1. Human Health

See Appendix 2.a.

#### 9.5.2.2. Environment

## 9.6. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Coatings – Professional

## 9.6.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Uses in Coatings			
Use Descriptor			
Sector(s) of Use		22	
Process Categories		1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	
Ū.		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	8a, 8d	
Specific Environmental Rele	ase Category	ESVOC SpERC 8.3b.v1	
Processes, tasks, activitie	s covered		
Covers the use in coatings (	paints, inks, adhesi	ves, etc) including exposures during use (including	
materials receipt, storage, p	reparation and trans	sfer from bulk and semi-bulk, application by spray,	
roller, brush, spreader by ha	nd or similar metho	ds, and film formation), and equipment cleaning,	
maintenance and associated	l laboratory activitie	S.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	nanagement measures	
•		5	
Section 2.1 Control of wor	ker exposure		
Product characteristics	•		
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3</mark> .	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is impleme	ented G1.	
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	of general ventilati	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenan	ce.	
	Where there is pot	ential for exposure: Ensure relevant staff are informed	
	of exposure potent	tial and aware of basic actions to minimise exposures;	
	ensure suitable pe	rsonal protective equipment is available; clear up spills	
	and dispose of was	ste in accordance with regulatory requirements; monitor	
	effectiveness of co	ntrol measures; provide regular health surveillance as	
	appropriate; identif	y and implement corrective actions. G25	
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect	
irritants) G19	SKIN CONTACT. Wear	gloves (tested to $EN3/4$ ) if hand contact with	
	substance likely. C	clean up contamination/spills as soon as they occur.	
	vvasn off skin cont	amination immediately. Provide basic employee	
	that may develop	7 minimise exposures and to report any skin effects	
	unat may develop.	Lo Other Skill protection measures such as impervious	
	Suits and lace sille	and may be required during high dispersion activities	

	which are likely to lead to substantial aerosol release, e.g. spraying. E4		
General exposures (closed systems) CS15	Handle substance within a closed system E47		
Filling / preparation of equipment from drums or containers CS45	Wear suitable gloves tested to EN374 PPE15		
Material transfers, Pumped Drum/batch transfers CS3, CS8	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16		
Preparation of material for application; Mixing operations (closed systems) CS96, CS29	No other specific measures identified EI20		
Preparation of material for application, mixing operations (open systems) CS66,CS30	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16		
Film formation - air drying CS95	Wear suitable gloves tested to EN374 PPE1	5	
Manual spraying, indoor CS24, OC8	Carry out in a vented booth or extracted enclosure E57 Wear suitable gloves tested to EN374 PPE15 Limit the substance content in the product to 25 % OC18 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11		
Manual spraying, outdoor CS24, OC9	Wear a respirator conforming to EN140 with Type A/P2 filter or better. PPE29 Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17 Limit the substance content in the product to 25 % OC18 Avoid carrying out activities involving exposure for more than 4 hours OC28 Ensure operatives are trained to minimise exposures EI19		
Roller, spreader, flow application CS69	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16 Limit the substance content in the product to 25 % OC18		
Dipping, immersion and pouring CS4	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16.		
Hand application - fingerpaints, pastels, adhesives CS72	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17 Limit the substance content in the product to 5 % OC17		
Laboratory activities CS36	No other specific measures identified EI20		
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance E65 Wear chemically resistant gloves (tested to type EN374) in combination with basic employee training PPE16		
Storage CS67	Store substance within a closed system E84		
Additional information on	the basis for the allocation of the identified	d OCs and RMMs is	
contained in Appendices 2	? to 3		
Section 2.2 Control of env	ironmentai exposure		
Product characteristics	DrC21 Dradominantly bydranbabia [DrC4a]		
Substance is complex UVCE	s [PIC3]. Predominantly hydrophobic [PIC4a]	·	
Amounts used		0.4	
Traction of EO tonnage used in region U.1		0.1	
Tegional use (official contrast) 2.363   Eraction of Regional tennage used locally 0.0005			
Annual site tennage (tennage used locally		1.2	
Maximum daily site tonnage	(kg/dav)	3.2	
Frequency and duration of	use	v. <b>L</b>	
Continuous release [FD2].			
Emission days (days/year)		365	
Environmental factors not	influenced by risk management		

Local treshwater dilution factor	10	
Local marine water dilution factor	100	
Other given operational conditions affecting environmental exposure		
Release fraction to air from process (initial release prior to RMM)	0.98	
Release fraction to wastewater from process (initial release prior to RMM)	0.01	
Release fraction to soil from process (initial release prior to RMM)	0.01	
Technical conditions and measures at process level (source) to prev	/ent release	
Common practices vary across sites thus conservative process release e	stimates used [TCS1]	
Technical onsite conditions and measures to reduce or limit dischar	suitates used [1001].	
releases to soil	ges, all ellissions and	
Risk from environmental exposure is driven by humans via indirect expos [TCR1j].	ure (primarily ingestion)	
No wastewater treatment required [TCR6].		
Treat air emission to provide a typical removal efficiency of (%)	N/A	
Treat onsite wastewater (prior to receiving water discharge) to provide	0	
the required removal efficiency $\geq$ (%)		
If discharging to domestic sewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of $\geq$ (%)		
Organisation measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be	incinerated, contained or	
reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment pla	Int	
<u></u>		
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1	
Maximum allowable site tonnage ( $M_{Safe}$ ) based on release following total wastewater treatment removal ( $kg/d$ )	5.0e1	
Assumed domestic sewage treatment plant flow $(m^3/d)$	2000	
Conditions and measures related to external tractment of wasts for		
Conditions and measures related to external treatment of waste for (		
External treatment and disposal of waste should comply with applicable r	egulations [E I W3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable regulations [ERW1].		
Additional information on the basis for the allocation of the indentifi	ed OCs and RMMs is	
contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk	
model [EE2].		
Section 4 Guidance to check compliance with the Exposure Scenar	io	
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the Measures/Operational Conditions outlined in Section 2 are implemented.	Risk Management G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available		
Mazaru uala uo noi support ine neeu ior a DNEE to be establisheu ior other nealth eneols. G30. RISK		
management measures are based on qualitative risk characterisation. Go	n	

#### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

## 9.6.2. Exposure Estimation

#### 9.6.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.6.2.2. Environment

## 9.7. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Oil and Gas Field Drilling and Production Operations – Industrial

## 9.7.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	rio Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Use in Oil and Gas Field Drilling and Production Operations			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 8a, 8b	
		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	gories	4	
Specific Environmental Rele	ase Category	Qualitative assessment	
Processes, tasks, activities	s covered		
Oil field well drilling and proc	luction operations (i	including drilling muds and well cleaning) including	
material transfers, on-site for	mulation, well head	d operations, shaker room activities and related	
maintenance.			
Assessment Method			
See Section 3.	ditions and risk m		
Section 2 Operational con	altions and risk m	lanagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid vapour pres	ssure <0.5 kPa at STP_0C3	
Concentration of substance	Covers percentage substance in the product up to 100 % (upless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational	
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Man	nagement Measures and Operating Conditions	
General measures	Control any potenti	al exposure using measures such as contained	
applicable to all activities	systems, properly (	designed and maintained facilities and a good standard	
CS135	of general ventilation	on. Drain down systems and transfer lines prior to	
	breaking containme	ent. Drain down and flush equipment where possible	
	prior to maintenand	ce.	
	Where there is pote	ential for exposure: Ensure relevant staff are informed	
	of exposure potent	ial and aware of basic actions to minimise exposures;	
	ensure suitable personal protective equipment is available; clear up spills		
	and dispose of waste in accordance with regulatory requirements; monitor		
	effectiveness of control measures; provide regular health surveillance as		
Gonoral mogeuros (skin	Avoid direct ckin or	y and implement corrective actions. 620	
General measures (SKII)	Avoiu uliect skin co	aloves (tested to EN374) if band contact with	
	substance likely C	lean un contamination/snills as soon as they occur	
	Substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee		
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop.	E3	

Bulk transfers CS14	Transfer via enclosed lines E52		
Filling / preparation of equipment from drums or containers. CS45	Wear suitable gloves tested to EN374 PPE15.		
Drilling mud (re-) formulation. CS115	No other specific measures identified EI20		
Drill floor operations CS116	Wear chemically resistant gloves (tested to I 'basic' employee training PPE16	EN374) in combination with	
Operation of solids filtering equipment CS117 Elevated temperature CS111	Provide the operation with a properly sited receiving hood E71.		
Cleaning of solids filtering	Wear chemically resistant gloves (tested to f	EN374) in combination with	
Cuttings treatment and disposal CS515	Provide extract ventilation to points where en	missions occur E54	
Sample collection CS2	No other specific measures identified EI20		
General exposures (closed systems) CS15	Handle substance within a closed system E4	47	
General exposures (open svstems) CS16	Wear chemically resistant gloves (tested to f 'basic' employee training PPE16	EN374) in combination with	
Pouring from small containers CS9	Wear chemically resistant gloves (tested to f 'basic' employee training. PPE16	EN374) in combination with	
Equipment cleaning and maintenance CS39	Wear chemically resistant gloves (tested to I 'basic' employee training. PPE16	EN374) in combination with	
Storage CS67	Store substance within a closed system. E84	4	
Additional information on	the basis for the allocation of the identifie	ed OCs and RMMs is	
contained in Appendices 2	? to 3		
Section 2.2 Control of env	Ironmental exposure		
Product characteristics	D-021 Dradominantly hydrophobio [DrC4a	1	
Substance is complex UVGL		.].	
Amounts used	- :	14	
Fraction of EU tormage used	J tonnage used in region [A1]		
Regional use tonnaye (tonne	es/year) [A2]	/./5E+U3	
Fraction of Regional tonnage	onal tonnage used locally [A3] Not Applicable		
Annual site tonnage (tonnes	/year) [A5]	Not Applicable	
Maximum daily site tonnage	(kg/day) [A4]	Not Applicable	
Frequency and duration of	iuse	• • • •	
Emission days (days/year) [I	-D4]	Not Applicable	
Environmental factors not	influenced by risk management		
Local marine water dilution factor [EF2] Not Applicable			
Other given operational co	anditions affecting environmental exposur	е	
Release fraction to air from p	Release fraction to air from process (initial release prior to RMM) Not Applicable		
Release fraction to wastewater from process (initial release prior to Not Applicable			
Technical conditions and measures at process level (source) to prevent release			
Discharge to aquatic enviror	ment is restricted (see Section 4.2).		
Technical onsite condition releases to soil	is and measures to reduce or limit dischar	rges, air emissions and	
Not Applicable			
Treat air emission to provide	a typical removal efficiency of (%) [TCR7]	Not Applicable	
Treat onsite wastewater (prid	or to receiving water discharge) to provide	Not Applicable	
the required removal efficien	ICY ≥ (%)		
If discharging to domestic se	wage treatment plant, provide the required	Not Applicable	

	-	
onsite wastewater removal efficiency of $\geq$ (%)		
Organisation measures to prevent/limit release from site		
Prevent environmental discharge consistent with regulatory requirement	S.	
Conditions and measures related to municipal sewage treatment pl	ant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	Not Applicable	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	Not Applicable	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on domestic sewage treatment release (kg/d)	Not Applicable	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	Not Applicable	
Conditions and measures related to external treatment of waste for	disposal	
External treatment and disposal of waste should comply with applicable regulations.	local and/or national	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable regulations	local and/or national	
Conditions and measures related to external treatment of waste for	disposal	
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures G21.	s unless otherwise indicated.	
3.2. Environment		
Quantitative exposure and risk assessment not possible due to lack of e	missions to aquatic	
environment. Qualitative approach used to conclude safe use.		
Section 4 Guidance to check compliance with the Exposure Scena	rio	
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the	Risk Management	
Measures/Operational Conditions outlined in Section 2 are implemented	. G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should		
ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available		
hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk		
Management Measures are based on qualitative risk characterisation. G37.		
4.2. Environment		
Discharge to aquatic environment is restricted by law and industry prohibits release. <sup>1</sup> <sup>1</sup> OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas Installations		
in 2007, including the assessment of data reported in 2006 and 2007.		

## 9.7.2. Exposure Estimation

### 9.7.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.7.2.2. Environment

## 9.8. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Oil and Gas Field Drilling and Production Operations – Professional

## 9.8.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Use in Oil and Gas Field Dril	lling and Productior	ו Operations
Use Descriptor		
Sector(s) of Use		22
Process Categories		1, 2, 3, 4, 8a, 8b
C C		Further information on the mapping and allocation of
l i i i i i i i i i i i i i i i i i i i		PROC codes is contained in Table 9.1
Environmental Release Categories 8d		8d
Specific Environmental Rele	ase Category	Qualitative assessment
Processes, tasks, activities covered		
Oil field well drilling operation	ns (including drilling	nuds and well cleaning) including material transfers,
on-site formulation, well hear	d operations, shake	er room activities and related maintenance.
Assessment Method	<b>.</b>	
See Section 3.		
Section 2 Operational con	ditions and risk m	nanagement measures
Section 2.1 Control of wor	ker exposure	
Product characteristics		
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated
in product	differently) G13	
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2
use/exposure		
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless
Conditions affecting	stated differently.	315. Assumes a good basic standard of occupational
exposure	hygiene is impleme	ented G1.
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions
General measures	Control any potent	ial exposure using measures such as contained
applicable to all activities	systems, properly	designed and maintained facilities and a good standard
CS135	of general ventilation	on. Drain down systems and transfer lines prior to
	breaking containm	ent. Drain down and flush equipment where possible
	prior to maintenance	
	Where there is pot	ential for exposure: Ensure relevant statt are informed
	of exposure potent	ial and aware of basic actions to minimise exposures;
	ensure suitable per	rsonal protective equipment is available; clear up spills
	and dispose of was	ste in accordance with regulatory requirements; monitor
	effectiveness of co	Introl measures; provide regular health surveillance as
Canaral magauraa (akin	appropriate, identi	y and implement corrective actions. G20
General measures (skin	AVOID DIFECT SKILL C	Solution of the Solution of th
imitants) G 19	SKIN CONTACT. VVear	GIOVES (Tested to EIN374) If hand contact with
	Substance likely.	Jean up contamination/spills as soon as they occur.
	Wash on skin cond	Immalion immediately. Provide basic employee
	that may develop	
Dulk transford CS11	Moor suitable glov	EJ (as tested to EN1274 DDE15
DUIK LIDIISIEIS US 14	wear suitable glow	es les leu lo EN374 FFE 13

Filling / preparation of equipment from drums or containers, CS45	Wear suitable gloves tested to EN374 PPE1	5	
Drilling mud (re-) formulation. CS115	No other specific measures identified EI20		
Drill floor operations CS116	Wear chemically resistant gloves (tested to 'basic' employee training PPE16	EN374) in combination with	
Operation of solids filtering equipment CS117 Elevated temperature CS111	Provide the operation with a properly sited r	eceiving hood E71.	
Cleaning of solids filtering equipment CS120	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16		
Cuttings treatment and disposal CS515	Provide extract ventilation to points where emissions occur E54		
Sample collection CS2	No other specific measures identified El20		
General exposures (closed systems) CS15	Handle substance within a closed system E4	47	
General exposures (open systems) CS16	Wear chemically resistant gloves (tested to basic' employee training PPE16	EN374) in combination with	
Pouring from small containers CS9	Wear chemically resistant gloves (tested to basic' employee training. PPE16	EN374) in combination with	
Equipment cleaning and maintenance CS39	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16		
Storage CS67	Store substance within a closed system. E8	4	
Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Appendices 2 to 3			
Section 2.2 Control of env	ironmental exposure		
Product characteristics	DrC21 Dradominantly hydrophabia [DrC4a	1	
Substance is complex UVCE	3 [PrC3]. Predominantiy hydrophobic [PrC4a	J.	
Amounts used		4	
Fraction of EU tonnage used in region [A1]		1	
Regional use tonnage (tonnes/year) [A2] 7.75E+03		7.75E+03	
Fraction of Regional tonnage used locally [A3] Not		Not Applicable	
Annual site tonnage (tonnes	/year) [A5]	Not Applicable	
Maximum daily site tonnage	(kg/day) [A4]	Not Applicable	
Frequency and duration of	USE		
Emission days (days/year) [r	-D4] influenced by risk management		
Local marine water dilution is	Local marine water dilution factor [EF2] [Not Applicable		
Other given operational conditions affecting environmental exposure			
Release fraction to air from process (initial release prior to RMM) Not Applicable		Not Applicable	
Release fraction to wastewater from process (initial release prior to Not Applicable RMM) [OOC5]		Not Applicable	
Technical conditions and r	measures at process level (source) to pre	vent release	
Discharge to aquatic environ	ment is restricted (see Section 4.2).		
Technical onsite condition	s and measures to reduce or limit discha	rges, air emissions and	
releases to soil			
Not Applicable			
I reat air emission to provide a typical removal efficiency of (%) [TCR7]		Not Applicable	
the required removal efficiency $> (\%)$			
If discharging to domestic sewage treatment plant, provide the required Not Applicable			
onsite wastewater removal efficiency of $\geq$ (%)			

Organisation measures to prevent/limit release from site		
Prevent environmental discharge consistent with regulatory requirements	S.	
Conditions and measures related to municipal sewage treatment pla	ant	
Estimated substance removal from wastewater via domestic sewage	Not Applicable	
treatment (%)		
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	Not Applicable	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on domestic sewage	Not Applicable	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	Not Applicable	
Conditions and massures related to external treatment of waste for	disposal	
External treatment and dispessed of waste should comply with applicable l	and/or national	
regulations		
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable local and/or national		
regulations.		
Conditions and measures related to external treatment of waste for	disposal	
Section 3 Exposure Estimation	•	
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated.	
G21.		
3.2. Environment		
Quantitative exposure and risk assessment not possible due to lack of er	nissions to aquatic	
environment. Qualitative approach used to conclude safe use.	_	
Section 4 Guidance to check compliance with the Exposure Scenar	io	
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the	Risk Management	
Measures/Operational Conditions outlined in Section 2 are implemented.	G22.	
Where other Rick Management Maggures/Operational Conditions are ad	opted then upper abould	
where other Risk management measures/Operational Conditions are adopted, then users should		
ensure that risks are managed to at least equivalent levels. G23.		
Available bazard data do not enable the derivation of a DNEL for dermal irritant effects G32 Available		
hazard data do not support the need for a DNEL to be established for other health effects. G36 Risk		
Management Measures are based on gualitative risk characterisation. G37.		
4.2. Environment		
Discharge to aquatic environment is restricted by law and industry prohibits release. <sup>1</sup>		
<sup>1</sup> OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas Installations		
in 2007, including the assessment of data reported in 2006 and 2007.		

## 9.8.2. Exposure Estimation

**9.8.2.1. Human Health** See Appendix 2.a and 2.b

#### 9.8.2.2. Environment

## 9.9. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Industrial

## 9.9.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Lubricants			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1. 2. 3. 4. 7. 8a. 8b. 9. 10. 13. 17. 18	
· · · · · · · · · · · · · · · · · · ·		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Categories		4, 7	
Specific Environmental Rele	ase Category	ESVOC SpERC 4.6a.v1	
Processes, tasks, activities	Processes, tasks, activities covered		
Covers the use of formulated	d lubricants in close	ed and open systems including material transfers	
operations, operation of mac	chinery/engines and	similar articles, reworking on reject articles, equipment	
maintenance and disposal o	f wastes.		
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	nanagement measures	
Section 2.1 Control of wor	rker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3</mark> .	
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated	
in product	differently) G13		
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2	
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational	
exposure	hygiene is impleme	ented G1.	
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	of general ventilati	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenance.		
	Where there is pot	ential for exposure: Ensure relevant staff are informed	
	of exposure potential and aware of basic actions to minimise exposures;		
	ensure suitable personal protective equipment is available; clear up spills		
	and dispose of waste in accordance with regulatory requirements; monitor		
	effectiveness of control measures; provide regular health surveillance as		
	appropriate; identil	ty and implement corrective actions. G25	
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect	
irritants) G19	skin contact. Wear	gloves (lested to EIN3/4) If hand contact with	
	substance likely. C	plean up contamination/spills as soon as they occur.	
	vvasn on skin cont	amination immediately. Provide basic employee	
	that may dayalar	F3 Other skin protection measures such as impensions	
	suits and face ship	lds may be required during high dispersion activities	
		nae may be required during right dispersion activities	

which are likely to lead to substantial aerosol release, e.g. spraying. E4		
General exposures (Closed systems) CS15	Handle substance within a closed system E	547.
General exposures (Open systems) CS16	Provide extract ventilation to points where emissions occur. E54	
Bulk transfers CS14	Handle substance within a closed system E tested to EN374 PPE15	47 Wear suitable gloves
Filling preparation of equipment from drums or containers CS45	Wear gloves tested to EN374 PPE15	
Initial factory fill of equipment <mark>CS75</mark>	Wear suitable gloves tested to EN374 PPE	15
Operation and lubrication of high energy open equipment CS17	Provide extract ventilation to points where a area of openings to equipment E68	emissions occur E54 Restrict
Manual roller application or brushing CS13	Wear suitable gloves tested to EN374 with PPE17	specific employee training
Treatment of articles by dipping and pouring CS35	Wear chemically resistant gloves (tested to EN374) PPE15	
Spraying CS10	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings E60 Wear suitable gloves tested to EN374, coveralls and eve protection PPE23	
Maintenance (of larger plant items) and machine set up CS77	Ensure material transfers are under containment or extract ventilation E66 Provide extract ventilation to emission points when contact with warm (>50oC) lubricant is likely E67 Wear suitable gloves tested to EN374 PPE15	
Maintenance of small items	Wear chemically resistant gloves (tested to EN374) in combination with	
Re-manufacture of reject articles CS19	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16	
Storage CS67	Store substance within a closed system. Et	34
Additional information on	the basis for the allocation of the identifi	ed OCs and RMMs is
contained in Appendices 2	2 to 3	
Breduct characteristics	ironmental exposure	
Substance is complex LIV/CE	[PrC2] Prodominantly bydrophobic [PrC4]	2]
Amounts used		aj.
		0.4
Praction of EO tonnage used		0.1
Regional use connage (conne	es/year)	2.764
Fraction of Regional tonnage		0.0036
Annual site tonnage (tonnes/year)		1.0e2
Maximum daily site tonnage (kg/day)		5.0e3
Frequency and duration of use		
Continuous release [FD2].		
Emission days (days/year) 20		
Environmental factors not influenced by risk management		
Local freshwater dilution factor		10
Local marine water dilution factor 100		100
Other given operational conditions affecting environmental exposure		
Release fraction to air from	process (initial release prior to RMM)	5.0e-3
Release fraction to wastewater from process (initial release prior to 3.0e-6 RMM)		3.0e-6
Release fraction to soil from process (initial release prior to RMM) 0.001		
Technical conditions and measures at process level (source) to prevent release		
Common practices vary across sites thus conservative process release estimates used [TCS1].		

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		
Risk from environmental exposure is driven by humans via indirect expos [TCR1j].	ure (primarily ingestion)	
No wastewater treatment required [TCR6].		
Treat air emission to provide a typical removal efficiency of (%)	70	
Treat onsite wastewater (prior to receiving water discharge) to provide	0	
the required removal efficiency $\geq$ (%)		
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $> (\%)$	0	
Organisation measures to prevent/limit release from site		
Prevent discharge of undissolved substance to or recover from wastewate	er [OMS1] Do not apply	
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, c [OMS3].	contained or reclaimed	
Conditions and measures related to municipal sewage treatment pla	int	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	7.8e4	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000	
Conditions and measures related to external treatment of waste for o	disposal	
External treatment and disposal of waste should comply with applicable re	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable re	equlations [ERW1].	
Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmenta model [EE2].	al exposure with the Petrorisk	
Section 4 Guidance to check compliance with the Exposure Scenari	io	
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.		
Where other Risk Management Measures/Operational Conditions are adopted, then users should		
ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal i	irritant effects. G32. Available	
hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk		
Management Measures are based on qualitative risk characterisation. G37.		
4.2. Environment		
Guidance is based on assumed operating conditions which may not be ap	oplicable to all sites; thus,	
scaling may be necessary to define appropriate site-specific risk management measures [DSU1].		
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either		
alone of in combination [DSU2]. Required removal efficiency for air can be achieved using onsite		
technologies, either alone or in combination [DSU3]. Further details on so	caling and control	
IDSU41.	อา-เกินนอนาธอ-เมเล่าเฮอ.เาแบบ)	

## 9.9.2. Exposure Estimation

#### 9.9.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.9.2.2. Environment

## 9.10. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Professional: Low Environmental Release

## 9.10.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,
Title		
Lubricants – Professional: Lu	ow Environmental F	Release
Use Descriptor		
Sector(s) of Use		22
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 13, 17, 20 Further information on the mapping and allocation of PROC codes is contained in Table 9.1
Environmental Release Cate	egories	9a. 9b
Specific Environmental Rele	ase Category	ESVOC SpERC 9.6b.v1
Processes, tasks, activitie	s covered	
Covers the use of formulated operations, operation of eng maintenance and disposal o	l lubricants in close ines and similar arti f waste oil.	ed and open systems including material transfers icles, reworking on reject articles, equipment
Assessment Method		
See Section 3.		
Section 2 Operational con	ditions and risk m	anagement measures
Section 2.4. Control of way		
Section 2.1 Control or wor	Ker exposure	
Physical form of product	Liquid	
Vapour pressure (kPa)	Liquid vanour pres	source $< 0.5 \text{ kDa at STD } \cap C3$
Concentration of substance	Covers percentage	source in the product up to 100 % (unless stated
in product	differently) G13	
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2	
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless
Conditions affecting	stated differently.	G15. Assumes a good basic standard of occupational
exposure	hygiene is impleme	ented G1.
Contributing Scenarios	Specific Risk Man	nagement Measures and Operating Conditions
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25 Avoid direct skin contact with product. Identify potential areas for indirect	
irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities	
	which are likely to lead to substantial aerosol release, e.g. spraying. E4	
---	---	--
General exposures (Closed systems) CS15	Handle substance within a closed system E47 PPE15	
Operation of equipment containing engine oils and similar CS26	No other specific measures identified EI20	
General exposures (Open systems) CS16	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) E40 Wear suitable gloves tested to EN374 PPE15	
Bulk transfers CS14	Wear suitable gloves tested to EN374 PPE15 Avoid carrying out activities involving exposure for more than 4 hours OC28	
Filling preparation of equipment from drums or containers CS45; dedicated facility CS81	Use drum pumps or carefully pour from container E64 Wear suitable gloves tested to EN374 PPE15	
Filling preparation of equipment from drums or containers CS45; non- dedicated facility CS82	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16	
Operation and lubrication of high energy open equipment CS17 Indoor OC8	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings E60 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11	
Operation and lubrication of high energy open equipment CS17 Outdoor OC9	Ensure operation is undertaken outdoors E69 Avoid carrying out activities involving exposure for more than 4 hours OC28 Limit the substance content in the product to 25 % OC18 Wear suitable gloves tested to EN374 PPE15 Ensure operatives are trained to minimise exposures EI19	
Maintenance (of larger plant items) and machine set up CS77	Ensure material transfers are under containment or extract ventilation E66 Provide extract ventilation to emission points when contact with warm (>50oC) lubricant is likely E67 Wear suitable gloves tested to EN374 PPE15	
Maintenance of small items CS18	Drain or remove substance from equipment prior to break-in or maintenance E81 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16	
Engine lubricant service CS78	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16	
Manual roller application or brushing CS13	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17	
Spraying CS10 with local exhaust ventilation CS109	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings E60 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16 Ensure operatives are trained to minimise exposures E119	
Spraying CS10 without local exhaust ventilation CS110	Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. PPE32. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18 Limit the substance content in the product to 25 % OC18 Avoid carrying out activities involving exposure for more than 4 hours OC28	
Treatment of articles by dipping and pouring CS35	Wear suitable gloves tested to EN374 PPE15	
Storage CS67	Store substance within a closed system E84	
Additional information on the basis for the allocation of the identified OCs and RMMs is contained in Appendices 2 to 3 Section 2.2 Control of environmental exposure		

Product characteristics		
Substance is complex UVCB [PrC3] Predominantly hydrophobic [PrC4a]		
Amounts used	1.	
Fraction of FLI tonnade used in region	0 1	
Degional use tonnage (tonnes/vear)	2 202	
Fraction of Regional tonnade used locally	0.0005	
Annual site tonnade (tonnes/vear)	1.6	
Annual Sile ionnage (ionnes/year)		
Maximum vality site tormaye (ky/vay)	4.4	
Continuous release [FD2]. Emission days (days/year)	265	
Environmental factors not influenced by risk management	303	
Linvilonmental raciols not innuclioca by hor management	40	
Local freshwater dilution factor	10	
Local Manne water unution racion	100	
Other given operational conditions affecting environmental exposur	e	
Release fraction to air from process (initial release prior to RMM)	0.01	
Delegge fraction to wastewater from process (initial release prior to raining	0.01	
Release fraction to wastewater from process (initial release pror to RMM)	0.01	
Release fraction to soil from process (initial release prior to RMM)	0.01	
Technical conditions and measures at process level (source) to prev	vent release	
Common practices vary across sites thus conservative process release e	etimates used [TCS1]	
Technical onsite conditions and measures to reduce or limit dischar	rees air emissions and	
releases to soil	yes, an ennocione and	
Risk from environmental exposure is driven by humans via indirect expos	ure (primarily ingestion)	
ITCR1j].		
No wastewater treatment required [TCR6].		
Treat air emission to provide a typical removal efficiency of (%)	N/A	
Treat onsite wastewater (prior to receiving water discharge) to provide	0	
the required removal efficiency $\geq$ (%)		
If discharging to domestic sewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of $\geq$ (%)		
Organisation measures to prevent/limit release from site	incinerated contained or	
	Incinerated, contained or	
Conditions and measures related to municipal sewage treatment pla	ant	
Estimated substance removal from wastewater via domestic sewage	94.1	
treatment (%)		
Total efficiency of removal from wastewater after onsite and offsite	94.1	
(domestic treatment plant) RMMs (%)		
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	6.8e1	
wastewater treatment removal (kg/d)		
Assumed domestic sewage treatment plant flow (m°/d)	2000	
Conditions and measures related to external treatment of waste for o	disposal	
External treatment and disposal of waste should comply with applicable re	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].	
Additional information on the basis for the allocation of the indentifi	ied OCs and RMMs is	
contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health	we have all any indicated	
The ECETOC TRA tool has been used to estimate workplace exposures	Uniess otherwise indicated.	
3.2 Environment		

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

### Section 4 Guidance to check compliance with the Exposure Scenario

### 4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

#### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

### 9.10.2. Exposure Estimation

### 9.10.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.10.2.2. Environment

# 9.11. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Professional: High Environmental Release

### 9.11.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Lubricants – Professional: H	igh Environmental	Release	
Use Descriptor	5		
Sector(s) of Use		22	
Process Categories		1, 2, 3, 4, 8a, 8b, 9, 13, 17, 20 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate	eaories	8a. 8d	
Specific Environmental Rele	ase Category	ESVOC SpERC 8.6c.v1	
Processes, tasks, activitie	s covered		
Covers the use of formulated operations, operation of eng maintenance and disposal o	I lubricants in close ines and similar arti f waste oil.	ed and open systems including material transfers icles, reworking on reject articles, equipment	
Assessment inethod			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Cention 2.4. Control of way			
Section 2.1 Control of wor	ker exposure		
Product characteristics	Liquid		
Physical form of product	Liquid vapour pres	$r_{1}$	
Concentration of substance	Liquiu, vapour pres	SSULE < 0.5 KPd at 5 LP. 003.	
in product	differently) G13		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
General measures applicable to all activities CS135	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25		
irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities		

	which are likely to lead to substantial aerosol release, e.g. spraying. E4
General exposures (Closed systems) CS15	Handle substance within a closed system E47 PPE15
Operation of equipment containing engine oils and similar CS26	No other specific measures identified EI20
General exposures (Open systems) CS16	Provide a good standard of controlled ventilation (10 to 15 air changes
Bulk transfers CS14	Wear suitable gloves tested to EN374 PPE15 Avoid carrying out activities involving exposure for more than 4 hours OC28
Filling preparation of equipment from drums or containers CS45; dedicated facility CS81	Use drum pumps or carefully pour from container E64 Wear suitable gloves tested to EN374 PPE15
Filling preparation of equipment from drums or containers CS45; non- dedicated facility CS82	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16
Operation and lubrication of high energy open equipment CS17 Indoor OC8	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings E60 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11
Operation and lubrication of high energy open equipment CS17 Outdoor OC9	Ensure operation is undertaken outdoors E69 Avoid carrying out activities involving exposure for more than 4 hours OC28 Limit the substance content in the product to 25 % OC18 Wear suitable gloves tested to EN374 PPE15 Ensure operatives are trained to minimise exposures EI19
Maintenance (of larger plant items) and machine set up CS77	Ensure material transfers are under containment or extract ventilation E66 Provide extract ventilation to emission points when contact with warm (>50oC) lubricant is likely) E67 Wear suitable gloves tested to EN374 PPE15
Maintenance of small items CS18	Drain or remove substance from equipment prior to break-in or maintenance E81 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Engine lubricant service CS78	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16
Manual roller application or brushing CS13	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. PPE17
Spraying CS10	Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings E60 Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16 Ensure operatives are trained to minimise exposures E119 If technical measures not practical: G16 Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. PPE32. Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. PPE18 Limit the substance content in the product to 25 % OC18 Avoid carrying out activities involving exposure for more than 4 hours OC28
i reatment of articles by dipping and pouring CS35	wear suitable gloves tested to EN3/4 PPE15
Storage CS67	Store substance within a closed system E84
Additional information on	the basis for the allocation of the identified OCs and RMMs is
Section 2.2 Control of env	ironmental exposure
Product characteristics	
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a].

Amounts used		
Fraction of EU tonnage used in region	0.1	
Regional use tonnage (tonnes/year)	3.2e3	
Fraction of Regional tonnage used locally	0.0005	
Annual site tonnage (tonnes/vear)	1.6	
Maximum daily site tonnage (kg/day)	4.4	
Frequency and duration of use		
Continuous release (FD2)		
Emission days (days/year)	365	
Environmental factors not influenced by risk management		
Local freshwater dilution factor	10	
Local marine water dilution factor	100	
Other given operational conditions affecting environmental exposur	<b>100</b>	
	6	
Release fraction to air from process (initial release prior to RMM)	1.5e-1	
Release fraction to wastewater from process (initial release prior to	0.05	
RMM)	0.00	
Release fraction to soil from process (initial release prior to RMM)	0.05	
Technical conditions and measures at process level (source) to prev	vent release	
Common practices vary across sites thus conservative process release e	stimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit dischar	rges, air emissions and	
releases to soil		
Risk from environmental exposure is driven by humans via indirect expos	sure (primarily ingestion)	
[TCR1j].		
No wastewater treatment required [1CR6].		
I reat air emission to provide a typical removal efficiency of (%)	N/A	
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $> \binom{9}{2}$	0	
In the required removal ended including $\geq (\%)$	0	
in discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $> (\%)$	0	
Organisation measures to prevent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be	incinerated. contained or	
reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment pla	ant	
Estimated substance removal from wastewater via domestic sewage	94.1	
treatment (%)		
Total efficiency of removal from wastewater after onsite and offsite	94.1	
(domestic treatment plant) RMMs (%)	0.0-1	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	6.861	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000	
Conditions and measures related to external treatment of waste for	disposal	
External treatment and disposal of waste should comply with applicable r	egulations [ETW3].	
Conditions and measures related to external recovery of waste	-3	
External recovery and recycling of waste should comply with applicable re	egulations (FRW1)	
Additional information on the basis for the allocation of the indentif	ied OCs and RMMs is	
contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
G21.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk	
model [EE2].		

Section 4 Guidance to check compliance with the Exposure Scenario

### 4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. <u>G23</u>.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

#### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

### 9.11.2. Exposure Estimation

### 9.11.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.11.2.2. Environment

# 9.12. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Metal Working Fluids/Rolling Oils – Industrial

# 9.12.1. Exposure Scenario

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53			
Title			
Use in Metal Working Fluids	/Rolling Oils		
Use Descriptor	0		
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17	
Ū.		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	4	
Specific Environmental Rele	ase Category	ESVOC SpERC 4.7a.v1	
Processes, tasks, activities	s covered		
Covers the use in formulated	MWFs/rolling oils	including transfer operations, rolling and annealing	
activities, cutting/machining	activities, automate	d and manual application of corrosion protections	
(including brushing, dipping	and spraying), equi	pment maintenance, draining and disposal of waste	
oils.			
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
Other Operational	Accuracy use at not more than 20°C should embleat temperature uplace		
	Assumes use at not more than 20 C above amplent temperature, unless		
	hvaiene is impleme	anted G1	
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
contributing coentries	Specific Misk Management Measures and Operating Conditions		
	- · · ·		
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	of general ventilation	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenant	Ce.	
	vvnere there is pot	ential for exposure: Ensure relevant staff are informed	
		and aware of basic actions to minimize exposures,	
	ensure suitable pe	rsonal protective equipment is available, clear up spins	
	affectiveness of co	ntrol measures: provide regular health surveillance as	
	appropriate: identify and implement corrective actions. C25		
General measures (skin	Avoid direct skin o	ontact with product. Identify potential areas for indirect	
irritants) G19	skin contact Wear	aloves (tested to FN374) if hand contact with	
	substance likely C	lean up contamination/spills as soon as they occur	
	Wash off skin cont	amination immediately. Provide basic employee	
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop.	E3 Other skin protection measures such as impervious	

	suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraving, F4		
Conoral exposures (Closed	Handle substance within a closed system E47		
systems) CS15			
General exposures (Open	Provide extract ventilation to points where	emissions occur E54	
systems) CS16			
Bulk transfers CS14	Handle substance within a closed system. EN374 PPE15	E47 Wear gloves tested to	
Filling preparation of	Wear gloves tested to EN374 PPE15		
equipment from drums or containers CS45			
Process sampling CS2	No other specific measures identified EI20		
Metal Machining	Minimise exposure by partial enclosure of	the operation or equipment and	
Operations CS79	provide extract ventilation at openings E60		
Treatment of articles by	Wear gloves tested to EN374 PPE15		
dipping and pouring CS35			
Spraying CS10	Minimise exposure by enclosing the operat	tion or equipment and provide	
	extract ventilation at openings E60 Provide	a good standard of general	
	tested to EN374, coveralls and eve protect	ion PPE23	
Manual roller application or	Wear suitable gloves tested to EN374 with	specific employee training	
brushing CS13	PPE17	op oo	
Automated metal	Handle substance within a predominantly of	closed system provided with	
rolling/forming CS80	extract ventilation E49		
Semi-automated metal	Provide extract ventilation to points where	emissions occur E54.	
rolling/forming CS83			
Equipment cleaning and	Drain down system prior to equipment brea	ak-in or maintenance E55 Wear	
maintenance CS39.	chemically resistant gloves (lested to EN3)	(4) In combination with basic	
Storage CS67	Store substance within a closed system E	84	
Additional information on the basis for the allocation of the identified OCs and RMMs is			
contained in Appendices 2 to 3			
Section 2.2 Control of environmental exposure			
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4	a].	
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonne	es/year)	1.0e4	
Fraction of Regional tonnage	e used locally	0.0097	
Annual site tonnage (tonnes	/year)	1.0e2	
Maximum daily site tonnage	(kg/day)	5.0e3	
Frequency and duration of	fuse		
Continuous release [FD2].			
Emission days (days/year)		20	
Environmental factors not	influenced by risk management		
Local freshwater dilution factor			
Local marine water dilution factor		100	
Other given operational conditions affecting environmental exposure			
Release fraction to air from	Release fraction to air from process (initial release prior to RMM)         0.02		
Release fraction to wastewater from process (initial release prior to 3.0e-6 RMM)		3.0e-6	
Release fraction to soil from	process (initial release prior to RMM)	0	
Technical conditions and measures at process level (source) to prevent release			
Common practices vary across sites thus conservative process release estimates used [TCS1].			

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		
Risk from environmental exposure is driven by humans via indirect expos	ure (primarily ingestion)	
[TCR1j].		
No wastewater treatment required [ICR6].		
I reat air emission to provide a typical removal efficiency of (%)	70	
I reat onsite wastewater (prior to receiving water discharge) to provide	0	
the required removal efficiency $\geq$ (%)	0	
In discharging to domestic sewage treatment plant, provide the required ensite westewater removel efficiency of $\geq (0/2)$	0	
Organization management to provent/limit release from site		
Organisation measures to prevent/limit release from site	or [OMS1] Do not opply	
industrial sludge to natural soils [OMS2]. Sludge should be incinerated of	contained or reclaimed	
IOMS31.		
Conditions and measures related to municipal sewage treatment pla	Int	
Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	7.8e4	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000	
Conditions and measures related to external treatment of waste for o	disposal	
External treatment and disposal of waste should comply with applicable re	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].	
Additional information on the basis for the allocation of the indentificontained in PETRORISK file.	ed OCs and RMMs is	
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
<u>G21.</u>		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmenta model [EE2].	al exposure with the Petrorisk	
Section 4 Guidance to check compliance with the Exposure Scenari	0	
4.1. Health		
Measures/Operational Conditions outlined in Section 2 are implemented.	Risk Management G22.	
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal i	irritant effects. G32. Available	
hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk		
Management Measures are based on qualitative risk characterisation. G37.		
4.2. Environment		
Guidance is based on assumed operating conditions which may not be ap	oplicable to all sites; thus,	
scaling may be necessary to define appropriate site-specific risk management measures [DSU1].		
Required removal efficiency for wastewater can be achieved using onsite	/oπsite technologies, either	
alone of in combination [DSU2]. Required removal efficiency for air can be technological either close or in combination [DSU2]. Further details are a	be achieved using onsite	
technologies are provided in SpERC factsheet (http://cefic.org/ep/reach fr	camy and control pr-industries-libraries html)	
IDSU4].		

## 9.12.2. Exposure Estimation

### 9.12.2.1. Human Health

See Appendix 2.a and 2.b

### 9.12.2.2. Environment

# 9.13. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Release Agents or Binders – Industrial

# 9.13.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Use as Release Agents or B	inders		
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 4, 6, 7, 8b, 10, 13, 14	
-		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	4	
Specific Environmental Rele	ase Category	ESVOC SpERC 4.10a.v1	
Processes, tasks, activities	s covered		
Covers the use as binders a	nd release agents i	ncluding material transfers, mixing, application	
(including spraying and brus	hing), mould formin	ig and casting, and handling of waste.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (KPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. UC3.	
Concentration of substance	Covers percentage substance in the product up to 100 % (unless stated		
In product	Covers doily experi	aurea un ta 9 haura (unleas atatad difforentlu) C2	
	Covers daily expos	sures up to $\delta$ nours (unless stated unlerently) $\Theta_2$	
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature unless	
Conditions affecting	stated differently G15 Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	of general ventilati	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenand	ce.	
	Where there is pot	ential for exposure: Ensure relevant staff are informed	
	of exposure potent	ial and aware of basic actions to minimise exposures;	
	ensure suitable pe	rsonal protective equipment is available; clear up spills	
	and dispose of was	ste in accordance with regulatory requirements; monitor	
	effectiveness of co	Introl measures; provide regular nealth surveillance as	
	appropriate; identii	y and implement corrective actions. 625	
General measures (skin	AVOID DIFECT SKILL CO	Solution of the second se	
	skin contact. Wear	Yoan un contamination/enille as soon as they occur	
	Mach off skin cont	amination immediately. Provide basic employee	
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop	F3 Other skin protection measures such as impervious	
	suits and face shie	elds may be required during high dispersion activities	
	which are likely to	lead to substantial aerosol release, e.g. spraying. E4	

Bulk transfers CS14	Handle substance within a closed system E	47	
Drum and batch transfers	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16		
Mixing operations (closed systems) CS29	No other specific measures identified EI20		
Mixing operations (open	Wear chemically resistant gloves (tested to EN374) in combination with		
systems) <mark>CS30</mark>	'basic' employee training PPE16		
Mould forming CS31	Wear chemically resistant gloves (tested to 'basic' employee training PPE16	EN374) in combination with	
Casting Operations (open systems) CS32, CS108	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings E60 Wear suitable gloves tested to EN374 PPE15		
Spraying (machine) <mark>CS10</mark> , <mark>CS33</mark>	Minimise exposure by extracted full enclosure equipment E61 Wear suitable gloves tested	re for the operation or to EN374 PPE15	
Spraying (manual) <mark>CS10</mark> , <mark>CS34</mark>	Wear a full face respirator conforming to EN better. PPE32 Wear suitable gloves (tested	I140 with Type A/P2 filter or to EN374), coverall and eye	
	EI19	aned to minimise exposures.	
Manual applications e.g. brushing, rolling CS13	Wear chemically resistant gloves (tested to specific activity training PPE17	EN374) in combination with	
Equipment clean down and maintenance CS39	Drain down system prior to equipment breal Wear chemically resistant gloves (tested to 'basic' employee training. PPE16	k-in or maintenance. <mark>E65</mark> . EN374) in combination with	
Storage CS67	Handle substance within a closed system.	84	
Additional information on	the basis for the allocation of the identifie	ed OCs and RMMs is	
contained in Appendices 2	2 to 3		
Section 2.2 Control of env	vironmental exposure		
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	a].	
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonnes/vear)		1.4e4	
Fraction of Regional tonnage used locally 0.18		0.18	
Annual site tonnage (tonnes	/year)	2.5e3	
Maximum daily site tonnage	(kg/dav)	2.5e4	
Frequency and duration of	fuse	2.001	
Continuous release [FD2]			
Emission days (days/year)		100	
Environmental factors not	influenced by risk management		
Local freshwater dilution fac	tor	10	
Local marine water dilution f	actor	100	
Other given operational conditions affecting environmental exposure			
Release fraction to air from process (initial release prior to RMM) 1.0			
Release fraction to wastewater from process (initial release prior to 3.0e-7 RMM)			
Release fraction to soil from process (initial release prior to RMM) 0			
Technical conditions and measures at process level (source) to prevent release			
Common practices vary acro	oss sites thus conservative process release e	estimates used [TCS1].	
Technical onsite condition	is and measures to reduce or limit discha	rges, air emissions and	
releases to soil			
TCR1k].			
INO wastewater treatment required [ICK6].			
Treat onsite wastewater (priv	or to receiving water discharge) to provide	0	
insul onone wastewater (pri	or to reserving water alsonarge to provide	•	

the required removal efficiency $\geq$ (%)	-	
If discharging to domestic sewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of $\geq$ (%)		
Organisation measures to prevent/limit release from site		
Prevent discharge of undissolved substance to or recover from wastewate	er [OMS1]. Do not apply	
industrial sludge to natural soils [OMS2]. Sludge should be incinerated, o	contained or reclaimed	
[OMS3].		
Conditions and measures related to municipal sewage treatment pla	int	
Estimated substance removal from wastewater via domestic sewage	94.1	
treatment (%)	04.4	
I otal efficiency of removal from wastewater after onsite and offsite	94.1	
(domestic treatment plant) RMMs (%)	4 7-5	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	1.7e5	
wastewater treatment removal (kg/d)	2000	
Assumed domestic sewage treatment plant now (m /d)	2000	
Conditions and measures related to external treatment of waste for o	disposal	
External treatment and disposal of waste should comply with applicable re	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].	
Additional information on the basis for the allocation of the indentifi	ed OCs and RMMs is	
contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
G21.		
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk		
model [EE2].		
Section 4 Guidance to check compliance with the Exposure Scenar	0	
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management		
Measures/Operational Conditions outlined in Section 2 are implemented.	G22.	
W/hans athen Dials Management Masseynes (On systimus) Conditions are ad-		
where other Risk management measures/Operational Conditions are add	optea, then users should	
ensure that risks are managed to at least equivalent levels. G23.		
Available bazard data do not enable the derivation of a DNEL for dormal i	irritant offacts C32 Available	
Available nazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available		
Management Measures are based on qualitative risk characterisation G37		
4 2 Environment		
Guidance is based on assumed operating conditions which may not be a	onlicable to all sites: thus	
scaling may be necessary to define appropriate site-specific risk manage	ment measures [DSU11	
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either		
alone or in combination [DSU2] Required removal efficiency for air can be achieved using onsite		
technologies, either alone or in combination [DSU3]. Further details on scaling and control		
technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)		
[DSU4].	· · · · · · · · · · · · · · · · · · ·	

# 9.13.2. Exposure Estimation

### 9.13.2.1. Human Health

See Appendix 2.a and 2.b

### 9.13.2.2. Environment

# 9.14. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Release Agents or Binders – Professional

# 9.14.1. Exposure Scenario

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53			
Title			
Use as Release Agents or B	inders		
Use Descriptor			
Sector(s) of Use		22	
Process Categories		1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14	
		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	8a, 8d	
Specific Environmental Rele	ase Category	ESVOC SpERC 8.10b.v1	
Processes, tasks, activities	s covered		
Covers the use as binders a	nd release agents in	ncluding material transfers, mixing, application by	
spraying, brushing, and hand	dling of waste.		
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (кРа)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage	substance in the product up to 100 % (unless stated	
In product	differently) G13	the second differently (unless stated differently) C2	
	Covers daily expos	sures up to $\delta$ nours (unless stated unterentry) $\mathbf{G}_{\mathbf{Z}}$	
Other Operational	Accumes use at nr	at more than 20°C shove ambient temperature unless	
Conditions affecting	stated differently G15 Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Management Measures and Operating Conditions		
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	of general ventilation	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenand	ce.	
	Where there is pot	ential for exposure: Ensure relevant staff are informed	
	of exposure potent	ial and aware of basic actions to minimise exposures;	
	ensure suitable per	rsonal protective equipment is available; clear up spills	
	and dispose of was	ste in accordance with regulatory requirements; monitor	
	effectiveness of control measures; provide regular health surveillance as		
Canaral magguros (skip	appropriate, identi	y and implement corrective actions. 620	
General measures (skin	AVOID DITECT SKILL O	ontact with product. Identity potential areas for muneur	
	substance likely C	Yean up contamination/spills as soon as they occur	
	Wash off skin cont	amination immediately. Provide basic employee	
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop, E3 Other skin protection measures such as imperviou		
suits and face shields may be required during high dispersion activities			
	which are likely to	lead to substantial aerosol release, e.g. spraying. E4	

Bulk transfers (closed	No other specific measures identified EI20		
Drum/batch transfers CS8	Wear suitable gloves tested to EN374 PPE	15	
Mixing operations (closed systems) CS29	No other specific measures identified EI20		
Mixing operations (open systems) CS30	Wear suitable gloves tested to EN374 PPE	15	
Mould forming CS31	Provide extract ventilation to points where on suitable gloves tested to EN374 PPE15	emissions occur E54 Wear	
Casting Operations, with local exhaust ventilation CS32, CS109	Provide extract ventilation to points where e suitable gloves tested to EN374 PPE15	emissions occur E54 Wear	
Casting Operations, without local exhaust ventilation CS32, CS110	Wear a respirator conforming to EN140 wit PPE29 Wear suitable gloves (tested to EN: protection. PPE23	h Type A/P2 filter or better. 374), coverall and eye	
Spraying (manual) CS10, CS34 with local exhaust ventilation CS109	Apply ventilation or undertake in ventilated gloves (tested to EN374), coverall and eye operatives are trained to minimise exposure	enclosure E57 Wear suitable protection PPE23 Ensure es EI19	
Spraying (manual) CS10, CS34 without local exhaust ventilation CS110	Wear a full face respirator conforming to El better.PPE32 Wear suitable gloves (tested protection. PPE23 Ensure operatives are tr El19	N140 with Type A/P2 filter or to EN374), coverall and eye ained to minimise exposures.	
Manual applications e.g. brushing, rolling CS34, CS51	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17		
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance E65 Wear chemically resistant gloves (tested to type EN374) in combination with basic employee training PPE16		
Storage CS67	Store substance within a closed system E84		
Additional information on the basis for the allocation of the identified OCs and RMMs is			
Section 2.2 Control of env	ironmental exposure		
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4	a].	
Amounts used		-	
Fraction of EU tonnage used	l in region	0.1	
Regional use tonnage (tonne	es/year)	2.9e3	
Fraction of Regional tonnage	e used locally	0.0005	
Annual site tonnage (tonnes	/year)	1.5	
Maximum daily site tonnage	(kg/day)	4.0	
Frequency and duration of	use		
Continuous release [FD2].			
Emission days (days/year)	Emission days (days/year) 365		
Environmental factors not	influenced by risk management		
Local freshwater dilution fac	tor	10	
Local marine water dilution factor		100	
Other given operational co	onditions affecting environmental exposu	ire	
		0.05	
Release fraction to air from p	brocess (Initial release prior to RIVIVI)	0.95	
Release traction to wastewa	ter from process (initial release prior to	0.025	
Release fraction to soil from	process (initial release prior to RMM)	0.025	
Technical conditions and I	measures at process level (source) to pre	event release	
Common practices vary acro	oss sites thus conservative process release	estimates used [TCS1].	

Technical ensite conditions and measures to reduce or limit dischar	and air omissions and	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil		
Risk from environmental exposure is driven by humans via indirect expos [TCR1j].	sure (primarily ingestion)	
No wastewater treatment required [TCR9].		
Treat air emission to provide a typical removal efficiency of (%)	N/A	
Treat onsite wastewater (prior to receiving water discharge) to provide	0	
the required removal efficiency $\geq$ (%)		
If discharging to domestic sewage treatment plant, provide the required onsite wastewater remayed officiency of $\geq (\%)$	0	
Organisation massures to provent/limit release from site		
Do not apply industrial sludge to natural soils [OMS2] Sludge should be	incinerated contained or	
reclaimed [OMS3].		
Conditions and measures related to municipal sewage treatment pla	int	
	04.4	
treatment (%)	94.1	
Total efficiency of removal from wastewater after onsite and offsite	94.1	
(domestic treatment plant) Rivivis (%) Maximum allowable site tennage (M) based on release following total	6.201	
wastewater treatment removal (kg/d)	0.201	
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000	
Conditions and measures related to external treatment of waste for	disposal	
External treatment and disposal of waste should comply with applicable r	egulations [ETW3].	
Conditions and measures related to external recovery of waste		
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].	
Additional information on the basis for the allocation of the indentifi	ied OCs and RMMs is	
contained in PETRORISK file.		
Section 3 Exposure Estimation		
3.1. Health		
The ECETOC TRA tool has been used to estimate workplace exposures G21.	unless otherwise indicated.	
3.2. Environment		
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk	
model [EE2].		
Section 4 Guidance to check compliance with the Exposure Scenar	io	
4.1. Health		
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.		
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.		
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk		
A 2 Environment	D1.	
Guidance is based on assumed operating conditions which may not be a	nnlicable to all sites: thus	
scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control		
alone or in combination [DSU2]. Required removal efficiency for air can be technologies, either alone or in combination [DSU3]. Further details on s	caling and control	
alone or in combination [DSU2]. Required removal efficiency for air can be technologies, either alone or in combination [DSU3]. Further details on set technologies are provided in SpERC factsheet ( <u>http://cefic.org/en/reach-fectures)</u> [DSU4].	or industries libraries.html)	

## 9.14.2. Exposure Estimation

### 9.14.2.1. Human Health

See Appendix 2.a and 2.b

### 9.14.2.2. Environment

# 9.15. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Industrial

## 9.15.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Use as a Fuel			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1, 2, 3, 8a, 8b, 16	
		Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	7	
Specific Environmental Rele	ase Category	ESVOC SpERC 7.12a.v1	
Processes, tasks, activitie	s covered		
Covers the use as a fuel (or	fuel additives and a	additive components) and includes activities associated	
with its transfer, use, equipm	nent maintenance a	nd handling of waste.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	anagement measures	
Section 2.1 Control of wor	rker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.	
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated	
in product	differently) G13		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures applicable to all activities CS135 General measures (skin irritants) G19	Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25 Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3		
Bulk transfers CS14	Wear suitable glov	es tested to EN374. PPE15	
Drum/batch transfers CS8	Wear suitable glov	es tested to EN374.PPE15	

Use as a fuel (closed systems) GEST_12I, CS107	No other specific measures identified EI20	
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance E65 Wear chemically resistant gloves (tested to type EN374) in combination with	
Storage CS67	Handle substance within a closed system F	84
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is
contained in Appendices	2 to 3	
Section 2.2 Control of en	vironmental exposure	
Product characteristics	· · ·	
Substance is complex UVC	B [PrC3]. Predominantly hydrophobic [PrC4a	ı].
Amounts used		
Fraction of EU tonnage use	d in region	0.1
Regional use tonnage (tonn	nes/year)	4.5e6
Fraction of Regional tonnag	e used locally	0.34
Annual site tonnage (tonnes	s/year)	1.5e6
Maximum daily site tonnage	e (kg/dav)	5.0e6
Frequency and duration o	of use	
Continuous release [FD2].		
Emission days (days/year)		300
Environmental factors not	t influenced by risk management	
Local freshwater dilution fac	ctor	10
Local marine water dilution	factor	100
Other given operational c	onditions affecting environmental exposu	re
Release fraction to air from	process (initial release prior to RMM)	5.0e-3
Release fraction to wastewater from process (initial release prior to       0.00001         RMM)		
Release fraction to soil from	n process (initial release prior to RMM)	0
Technical conditions and	measures at process level (source) to pre	vent release
Common practices vary acr	oss sites thus conservative process release e	estimates used [TCS1].
Technical onsite condition releases to soil	ns and measures to reduce or limit discha	rges, air emissions and
Risk from environmental ex	posure is driven by freshwater sediment [TCF	R1b].
If discharging to domestic sewage treatment plant, no onsite wastewater		treatment required [TCR9].
Treat air emission to provide a typical removal efficiency of (%)		95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency $\geq$ (%)		97.7
If discharging to domestic sewage treatment plant, provide the required		60.4
onsite wastewater removal	efficiency of $\geq$ (%)	
Organisation measures to	prevent/limit release from site	
Prevent discharge of undiss industrial sludge to natural s [OMS3].	solved substance to or recover from wastewar soils [OMS2]. Sludge should be incinerated, o	contained or reclaimed
Conditions and measures	related to municipal sewage treatment pla	ant
Estimated substance remov treatment (%)	val from wastewater via domestic sewage	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)		97.7
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)		5.0e6
Assumed domestic sewage	treatment plant flow (m <sup>3</sup> /d)	2000
Conditions and measures	related to external treatment of waste for	disposal

Combustion emissions limited by required exhaust emission controls [ETW1]. Combustion emissions considered in regional exposure assessment [ETW2].

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable regulations [ERW1]. Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file.

### Section 3 Exposure Estimation

3.1. Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.

### 3.2. Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

#### Section 4 Guidance to check compliance with the Exposure Scenario

4.1. Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

#### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

### 9.15.2. Exposure Estimation

### 9.15.2.1. Human Health

See Appendix 2.a and 2.b

### 9.15.2.2. Environment

# 9.16. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Professional

# 9.16.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Use as a Fuel			
Use Descriptor			
Sector(s) of Use		22	
Process Categories		1, 2, 3, 8a, 8b, 16	
		Further information on the mapping and allocation of	
		PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	9a, 9b	
Specific Environmental Rele	ase Category	ESVOC SpERC 9.12b.v1	
Processes, tasks, activitie	s covered		
Covers the use as a fuel (or	fuel additives and a	additive components) and includes activities associated	
with its transfer, use, equipm	nent maintenance a	nd handling of waste.	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	nanagement measures	
•		5	
Section 2.1 Control of wor	ker exposure		
Product characteristics	•		
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3</mark> .	
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated	
in product	differently) G13		
Frequency and duration of	Covers daily exposures up to 8 hours (unless stated differently) G2		
use/exposure			
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is impleme	ented G1.	
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	of general ventilati	on. Drain down systems and transfer lines prior to	
	breaking containm	ent. Drain down and flush equipment where possible	
	prior to maintenand	ce.	
	Where there is pot	ential for exposure: Ensure relevant staff are informed	
	of exposure potent	tial and aware of basic actions to minimise exposures;	
	ensure suitable pe	rsonal protective equipment is available; clear up spills	
	and dispose of was	ste in accordance with regulatory requirements; monitor	
	effectiveness of co	introl measures; provide regular nealth surveillance as	
Conorol monouron (ali	appropriate; identii	y and implement corrective actions. G25	
General measures (Skin	Avoid direct skin co	ontact with product. Identity potential areas for indirect	
initality) G19	substance likely C	Plean up contamination/spills as soon as they occur	
	Wash off skin cont	amination immediately. Provide basic employee	
	training to prevent	/ minimise exposures and to report any skin effects	
	that may develop	F3	
Bulk transfers CS14	Wear suitable glov	es tested to EN374. PPE15	
Drum/batch transfore CS9		or carefully pour from container E64 Mean suitable	
	gloves tested to El	N374.PPE15	

Refuelling activities CS507	Wear suitable gloves tested to EN374 PPE1	5	
Use as a fuel (closed systems) GEST_12I, CS107	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) E11 or Ensure operation is undertaken outdoors E69		
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance E65 Wear chemically resistant gloves (tested to EN374) in combination with basic employee training PPE16		
Storage CS67	Store substance within a closed system E84		
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is	
contained in Appendices 2	2 to 3		
Section 2.2 Control of env	vironmental exposure		
Product characteristics			
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a]		
Amounts used			
Fraction of EU tonnage used	d in region	0.1	
Regional use tonnage (tonne	es/year)	6.7e6	
Fraction of Regional tonnage	e used locally	0.0005	
Annual site tonnage (tonnes	/year)	3.3e3	
Maximum daily site tonnage	(kg/day)	9.2e3	
Frequency and duration of	f use		
Continuous release [FD2].			
Emission days (days/year)		365	
Environmental factors not	influenced by risk management		
Local freshwater dilution fac	tor	10	
Local marine water dilution f	actor	100	
Other given operational co	onditions affecting environmental exposur	e	
Release fraction to air from process (initial release prior to RMM)       1.0e-4			
Release fraction to wastewater from process (initial release prior to 0.00001 RMM)			
Release fraction to soil from process (initial release prior to RMM)         0.00001			
Technical conditions and measures at process level (source) to prevent release			
Common practices vary acro	oss sites thus conservative process release e	stimates used [TCS1].	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and			
releases to soil	an un in driven hy hymene vie indirect even	ure (primorily in postion)	
Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion)			
No wastewater treatment red	auired [TCR6].		
Treat air emission to provide	N/A		
Treat onsite wastewater (prior to receiving water discharge) to provide		0	
the required removal efficien	$hcy \ge (\%)$		
If discharging to domestic se	ewage treatment plant, provide the required	0	
onsite wastewater removal efficiency of $\geq$ (%)			
Organisation measures to prevent/limit release from site			
Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].			
Conditions and measures related to municipal sewage treatment plant			
Estimated substance removal from wastewater via domestic sewage treatment (%)		94.1	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)		94.1	
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following tota wastewater treatment removal (kg/d)		1.4e5	

Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000
Conditions and measures related to external treatment of waste fo	r disposal
Combustion emissions limited by required exhaust emission controls [E	TW1]. Combustion emissions
considered in regional exposure assessment [ETW2].	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable	regulations [ERW1].
Additional information on the basis for the allocation of the indent contained in PETRORISK file	ified OCs and RMMs is
Section 3 Exposure Estimation	
3.1. Health	
The ECETOC TRA tool has been used to estimate workplace exposure	s unless otherwise indicated.
G21.	
3.2. Environment	
The Hydrocarbon Block Method has been used to calculate environmer	ntal exposure with the Petrorisk
model [EE2].	
Section 4 Guidance to check compliance with the Exposure Scena	ario
4.1. Health	
Predicted exposures are not expected to exceed the DN(M)EL when the	e Risk Management
Measures/Operational Conditions outlined in Section 2 are implemented	d. G22.
Where other Risk Management Measures/Operational Conditions are a	dopted, then users should
ensure that risks are managed to at least equivalent levels. G23.	
Available hazard data do not enable the derivation of a DNEL for derma	al irritant effects. G32. Available
hazard data do not support the need for a DNEL to be established for o	ther health effects. G36. Risk
Management Measures are based on qualitative risk characterisation.	537.
4.2. Environment	
Guidance is based on assumed operating conditions which may not be	applicable to all sites; thus,
scaling may be necessary to define appropriate site-specific risk manage	jement measures [DSUT].
along or in combination [DSI 12] Poquired removal efficiency for air car	he achieved using ensite
technologies, either alone or in combination [DSU3]. Further details on	scaling and control
technologies are provided in SpERC factsheet (http://cefic.org/ep/reach	for-industries-libraries html)
IDSU41	

## 9.16.2. Exposure Estimation

### 9.16.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.16.2.2. Environment

# 9.17. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Consumer

# 9.17.1. Exposure Scenario

Section 1 Ex R40, R65, R5	posure Scena 1/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title				
Use as a Fuel				
Use Descript	or			
Sector(s) of U	se		21	
Product Categ	gories		13	
			Further information on the mapping and allocation of PC codes is contained in Table 9.1	
Environmenta	I Release Cate	egories	9a, 9b	
Specific Envir	onmental Rele	ase Category	ESVOC SpERC 9.12c.v1	
Processes, ta	asks, activitie	s covered		
Covers consu	mer uses in fu	els.		
Assessment	Method			
See Section 3	8.			
Section 2 Or	perational con	ditions and risk m	nanagement measures	
Section 2.1 (	Control of cor	sumer exposure		
Product char	acteristics	•		
Physical form	of product	liquid		
Vapour press	ure (kPa)	Liquid, vapour pres	ssure > 10 Pa OC15	
Concentration	of substance	Unless otherwise s	stated, cover concentrations up to 100% [ConsOC1]	
in product				
Frequency an	d duration of	Unless otherwise s	stated, covers use amounts up to 37500g [ConsOC2];	
use/exposure		covers skin contac	t area up to 420cm2 [ConsOC5]	
Other Operati	onal	Unless otherwise s	stated, covers use frequency up to 0.143 times per day	
Conditions aff	ecting	[ConsOC4]; covers	s exposure up to 2 hours per event [ConsOC14]	
exposure	exposure			
Product Cate	gory	Specific Risk Mai	hagement Measures and Operating Conditions	
PC13:Fuels	OC	Unless otherwise s	stated, covers concentrations up to 100% [ConsOC1];	
Liquid -		covers use up to 5	2 days/year[ConsOC3]; covers use up to 1 time/on day	
subcategorie		of use[ConsOC4];	covers skin contact area up to 210.00 cm2 [ConsOC5];	
s added:		for each use event	t, covers use amounts up to 37500g [ConsOC2]; covers	
Automotive		outdoor use [Cons	OC12]; covers use in room size of 100m3[ConsOC11];	
Refuelling		for each use event	c, covers exposure up to 0.05hr/event[ConsOC14];	
	RIMIM	NO SPECIFIC RIVINS	developed beyond those OCs stated [ConsRIMM15]	
PC13:Fuels	OC	Unless otherwise s	stated, covers concentrations up to 100% [ConsOC1];	
Liquid -		covers use up to 26 days/year[ConsOC3]; covers use up to 1 time/on day		
subcategorie		of use[ConsOC4]; for each use event, covers use amounts up to 750g		
s added:		[ConsOC2]; covers outdoor use [ConsOC12]; covers use in room size of		
Garden		100m3[ConsOC11]; for each use event, covers exposure up to		
Equipment -		2.00nr/event[Cons	UC14]; developed herrord these OCs stated [ConsDMM15]	
Use	RIVIIVI	No specific Rivins	developed beyond those OCS stated [ConsRMM15]	
PC13:Fuels	OC	Unless otherwise s	stated, covers concentrations up to 100% [ConsOC1]:	
Liquid		covers use up to 2	6 days/year[ConsOC3]; covers use up to 1 time/on day	
(subcategorie		of use[ConsOC4];	covers skin contact area up to 420.00 cm2 [ConsOC5];	
s added):		for each use event	, covers use amounts up to 750g [ConsOC2]; Covers	
Garden		use in a one car ga	arage (34m3) under typical ventilation [ConsOC10];	

Equipment -		covers use in room size of 34m3[ConsOC11	]; for each use event, covers	
Relueiling	RMM	No specific RMMs developed beyond those OCs stated [ConsRMM15]		
Additional information on the basis for the allocation of the identified OCs and RMMs is				
contained in	Appendices 2	2 to 3		
Section 2.2	Control of env	vironmental exposure		
Product char	acteristics			
Substance is	complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	].	
Amounts use	ed			
Fraction of EL	J tonnage used	d in region	0.1	
Regional use	tonnage (tonn	es/year)	1.6e7	
Fraction of Re	aional tonnag	e used locally	0.0005	
Annual site to	nnage (tonnes	/vear)	8.2e3	
Maximum dai	v site tonnage	(kg/dav)	2.3e4	
Frequency a	nd duration of	fuse		
Continuous re	lease (FD2)			
Emission day	s (davs/vear)		365	
Environment	al factors not	influenced by risk management		
l ocal freshwa	ter dilution fac	tor	10	
Local marine	water dilution f	actor	100	
Other given o	operational co	onditions affecting environmental exposur	·e	
Risk from env	ironmental exp	posure is driven by humans via indirect expos	sure (primarily ingestion)	
[TCR1j].		,	(, , , , , , , , , , , , , , , , , , ,	
Release fracti	on to air from	wide dispersive use (regional only)	1.0e-4	
Release fracti	on to wastewa	ter from wide dispersive use	0.00001	
Release fraction to soil from wide dispersive use (regional only)		0.00001		
Conditions a	nd measures	related to municipal sewage treatment pla	int	
Estimated sub treatment (%)	ostance remov	al from wastewater via domestic sewage	94.1	
Maximum allo	wable site ton	nage (M <sub>Safe</sub> ) based on release following total	3.5e5	
Assumed don		treatment plant flow (m <sup>3</sup> /d)	2000	
Assumed don	lestic sewaye			
Conditions and measures related to external treatment of waste for disposal				
considered in	regional expos	sure assessment [ETW2].	w I]. Compusiton emissions	
Conditions a	nd measures	related to external recovery of waste		
External recov	very and recyc	ling of waste should comply with applicable re	egulations [ERW1].	
Additional in	formation on	the basis for the allocation of the indentif	ied OCs and RMMs is	
contained in	PETRORISK	file.		
Section 3 Ex	posure Estim	ation		
3.1. Health		hear used to estimate consumer evenesures	consistent with the content of	
The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC Papert #107 and the Chapter P15 of the IP8CSA TCD. Where exposure determinants differences and the Chapter P15 of the IP8CSA TCD.				
to these sources, then they are indicated				
3 2 Environr	nent			
The Hydrocar	bon Block Met	hod has been used to calculate environment	al exposure with the Petrorisk	
Section 4 Guidance to check compliance with the Exposure Scenario				
4 1 Health		eck compliance with the Exposure Scenar		
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management				
Measures/Op	erational Cond	litions outlined in Section 2 are implemented.	G22.	
Where other F	Risk Managem	ent Measures/Operational Conditions are ad	opted, then users should	
ensure that ris	sks are manag	ed to at least equivalent levels. G23.		

# 4.2. Environment

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html) [DSU4].

### 9.17.2. Exposure Estimation

**9.17.2.1. Human Health** See Appendix 2.c

**9.17.2.2. Environment** See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 9.18. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Functional Fluids – Industrial

## 9.18.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Use as Functional Fluids			
Use Descriptor			
Sector(s) of Use		3	
Process Categories		1. 2. 3. 4. 8a. 8b. 9	
		Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate	egories	7	
Specific Environmental Rele	ase Category	ESVOC SpERC 7.13a.v1	
Processes, tasks, activities	s covered		
Use as functional fluids e.g.	cable oils, transfer	oils, coolants, insulators, refrigerants, hydraulic fluids	
in industrial equipment inclue	ding maintenance a	nd related material transfers	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	nanagement measures	
Section 2.1 Control of wor	rker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. <mark>OC3</mark> .	
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated	
in product	differently) G13		
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational		
exposure	hygiene is implemented G1.		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities CS135	systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements: monitor		
	effectiveness of co appropriate; identif	ntrol measures; provide regular health surveillance as y and implement corrective actions. G25	
General measures (skin irritants) <mark>G19</mark>	Avoid direct skin co skin contact. Wear substance likely. C Wash off skin cont training to prevent that may develop.	ontact with product. Identify potential areas for indirect gloves (tested to EN374) if hand contact with clean up contamination/spills as soon as they occur. amination immediately. Provide basic employee / minimise exposures and to report any skin effects E3	
Bulk transfers CS14	No other specific n	neasures identified El20	
Drum/batch transfers CS8	Wear suitable glov	ves tested to EN374 PPE15	

	Transformite englaced lines E50	
Filling of articles/equipment (closed systems) CS84, CS107		
Filling / preparation of equipment from drums or containers CS45	Wear suitable gloves tested to EN374 PPE1	5
Equipment operation	No other specific measures identified EI20	
(Closed Systems) Coro	Destrict area of anonings and provide ovtras	t ventilation to omission
systems) CS16	points when substance handled at elevated	temperatures E75
Re-work and re-	Wear suitable gloves tested to EN374 PPE1	5
manufacture of articles CS19		
Equipment cleaning and maintenance CS39	Wear chemically resistant gloves (tested to F 'basic' employee training. PPE16	EN374) in combination with
Storage CS67	Store substance within a closed system. E84	4
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is
contained in Appendices 2	? to 3	
Section 2.2 Control of env	ironmental exposure	
Product characteristics		
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	]
Amounts used		
Fraction of EU tonnage used	in region	0.1
Regional use tonnage (tonne	es/year)	6.4e3
Fraction of Regional tonnage	e used locally	0.0016
Annual site tonnage (tonnes	/vear)	1.0e1
Maximum daily site tonnage	Vaximum daily site tonnage (kg/day) 5.0e2	
Frequency and duration of	i use	
Continuous release [FD2].		
Emission days (days/year)	20	
Environmental factors not	influenced by risk management	<u> </u>
Local freshwater dilution fac	tor	10
Local marine water dilution factor		100
Other given operational cc	onditions affecting environmental exposur	·e
Release fraction to air from p	process (initial release prior to RMM)	5.0e-3
Release fraction to wastewa	ter from process (initial release prior to	3.0e-6
Release fraction to soil from	process (initial release prior to RMM)	0.001
Technical conditions and r	measures at process level (source) to prev	vent release
Common practices vary acro	oss sites thus conservative process release e	stimates used [TCS1].
Technical onsite condition	is and measures to reduce or limit dischar	rges, air emissions and
Risk from environmental exc	osure is driven by humans via indirect expos	sure (primarily injestion)
ITCR1il.		
No wastewater treatment rec	quired [TCR6].	
Treat air emission to provide	a typical removal efficiency of (%)	0
Treat onsite wastewater (pric	or to receiving water discharge) to provide	0
the required removal efficien	iCy ≥ (%)	
If discharging to domestic se	wage treatment plant, provide the required	0
onsite wastewater removal e	fficiency of $\geq$ (%)	
Organisation measures to	prevent/limit release from site	
Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed		
[OMS3].	to the montainal according to a transmission of	
Conditions and measures	related to municipal sewage treatment pla	int

Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1		
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1		
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	7.8e3		
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000		
Conditions and measures related to external treatment of waste for	disposal		
External treatment and disposal of waste should comply with applicable r	egulations [ETW3].		
Conditions and measures related to external recovery of waste			
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].		
Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file.			
Section 3 Exposure Estimation			
3.1. Health			
The ECETOC TRA tool has been used to estimate workplace exposures G21.	unless otherwise indicated.		
3.2. Environment			
The Hydrocarbon Block Method has been used to calculate environmenta model [EE2].	al exposure with the Petrorisk		
Section 4 Guidance to check compliance with the Exposure Scenario			
4.1. Health			
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.			
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.			

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

### 9.18.2. Exposure Estimation

### 9.18.2.1. Human Health

See Appendix 2.a and 2.b

**9.18.2.2. Environment** See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 9.19. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Road and Construction Applications – Professional

## 9.19.1. Exposure Scenario

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53				
Title				
Use in Road and Construction Applications				
Use Descriptor				
Sector(s) of Use		22		
Process Categories		8a, 8b, 9, 10, 11, 13		
5		Further information on the mapping and allocation of		
		PROC codes is contained in Table 9.1		
Environmental Release Cate	gories	8d, 8f		
Specific Environmental Rele	ase Category	ESVOC SpERC 8.15.v1		
Processes, tasks, activitie	s covered			
Application of surface coatin	gs and binders in ro	bad and construction activities, including paving uses,		
manual mastic and in the ap	plication of rooting	and water-proofing membranes		
Assessment Method				
See Section 3.				
Section 2 Operational con	ditions and risk m	anagement measures		
Castion 2.4. Control of wo				
Section 2.1 Control of wor	Kerexposure			
Physical form of product	Liquid			
Vapour pressure (kPa)	Liquid vapour pres	ssure <0.5 kPa at STP $OC3$		
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated		
in product	differently) G13			
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2		
use/exposure	,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Other Operational	Assumes use at no	ot more than 20°C above ambient temperature, unless		
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational			
exposure	hygiene is impleme	ented G1.		
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions		
General measures	Control any potent	ial exposure using measures such as contained		
applicable to all activities	systems, properly	designed and maintained facilities and a good standard		
CS135	of general ventilation	on. Drain down systems and transfer lines prior to		
	breaking containm	ent. Drain down and flush equipment where possible		
	More there is not	Ce. Contial for exposure: Ensure relevant staff are informed		
	of exposure potent	tial and aware of hasic actions to minimise exposures.		
	ensure suitable pe	rsonal protective equipment is available: clear up spills		
and dispose of		ste in accordance with regulatory requirements; monitor		
	effectiveness of control measures; provide regular health surveillance as			
	appropriate; identif	iy and implement corrective actions. G25		
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect		
irritants) <mark>G19</mark>	skin contact. Wear gloves (tested to EN374) if hand contact with			
	substance likely. Clean up contamination/spills as soon as they occur.			
	Wash off skin cont	amination immediately. Provide basic employee		
	training to prevent	/ minimise exposures and to report any skin effects		
	suits and face shields may be required during high dispersion activities			
	which are likely to	lead to substantial aerosol release, e.g. spraying. E4		

Drum/batch transfers (Non- dedicated facility) CS8, CS82	Wear gloves tested to EN374 PPE15			
Drum/batch transfers (dedicated facility) CS8, CS81	Wear gloves tested to EN374 PPE15			
Spraying/fogging by machine application CS25	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings E60 Ensure operation is undertaken outdoors E69 Wear gloves tested to EN374 PPE15			
Manual applications e.g.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training PPE17			
Dipping, immersion and	Wear chemically resistant gloves (tested to EN374) in combination with			
Equipment cleaning and maintenance CS39	Drain down system prior to equipment break-in or maintenance. E65.Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16			
Store substance within a closed system. E84	Store substance within a closed system. E84			
Additional information on contained in Appendices 2	the basis for the allocation of the identifie 2 to 3	ed OCs and RMMs is		
Section 2.2 Control of env	vironmental exposure			
Product characteristics				
Substance is complex UVCE	3 [PrC3]. Predominantly hydrophobic [PrC4a	ı].		
Amounts used		-		
Fraction of EU tonnage user	t in region	0.1		
Regional use tonnage (tonn	es/vear)	3 1e4		
Fraction of Regional tonnage		0.0005		
Annual site tonnage (tonnes	/vear)	1 5e1		
Maximum daily site tonnage	(kg/day)	1.301		
Frequency and duration of	(kg/day)	4.201		
Continuous roloaso [ED2]	use			
Emission days (days/year)		365		
Environmental factors not	influenced by risk management	505		
Local freshwater dilution fac	tor	10		
Local marine water dilution f	actor	10		
Other given operational co	nditions affecting environmental exposu	100		
other given operational co	sinditions arecting environmental exposu	6		
Release fraction to air from	process (initial release prior to RMM)	0.95		
Release fraction to wastewa	ter from process (initial release prior to	0.01		
Release fraction to soil from	process (initial release prior to RMM)	0.04		
Technical conditions and	measures at process level (source) to pre	vent release		
Common practices vary acro	oss sites thus conservative process release e	estimates used ITCS11		
Technical onsite condition	is and measures to reduce or limit discha	rges, air emissions and		
releases to soil		· · · · · · · · · · · · · · · · · · ·		
Risk from environmental exp	oosure is driven by freshwater sediment [TCF	R1b].		
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR9].				
Treat air emission to provide a typical removal efficiency of (%) N/A				
Treat onsite wastewater (prior to receiving water discharge) to provide 12.2				
the required removal efficiency $\geq$ (%)				
It discharging to domestic sewage treatment plant, provide the required $\begin{bmatrix} 0 \\ 0 \end{bmatrix}$				
Unsite wastewater removal endemoy of $\geq (\%)$				
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated contained or				
reclaimed [OMS3].				
Conditions and measures related to municipal sewage treatment plant				

Estimated substance removal from wastewater via domestic sewage treatment (%)	94.1		
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	94.1		
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total wastewater treatment removal (kg/d)	6.2e2		
Assumed domestic sewage treatment plant flow (m <sup>3</sup> /d)	2000		
Conditions and measures related to external treatment of waste for disposal			
External treatment and disposal of waste should comply with applicable regulations [ETW3].			
Conditions and measures related to external recovery of waste			
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].		
Additional information on the basis for the allocation of the indentified OCs and RMMs is contained in PETRORISK file.			
Section 3 Exposure Estimation			
3.1. Health			
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated. G21.			
3.2. Environment			
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].			
Section 4 Guidance to check compliance with the Exposure Scenario			
4.1. Health			
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management			
Measures/Operational Conditions outlined in Section 2 are implemented. G22.			

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. G23.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk Management Measures are based on qualitative risk characterisation. G37.

#### 4.2. Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<u>http://cefic.org/en/reach-for-industries-libraries.html</u>) [DSU4].

### 9.19.2. Exposure Estimation

#### 9.19.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.19.2.2. Environment

# 9.20. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Explosives Manufacture and Use – Professional

# 9.20.1. Exposure Scenario

Section 1 Exposure Scenario Title Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53						
Title						
Explosives Manufacture and	Explosives Manufacture and Use					
Use Descriptor						
Sector(s) of Use		22				
Process Categories		1, 3, 5, 8a, 8b				
		Further information on the mapping and allocation of				
		PROC codes is contained in Table 9.1				
Environmental Release Categories		8e				
Specific Environmental Release Category		Not Applicable				
Processes, tasks, activities	s covered					
Covers exposures arising fro	om the manufacture	and use of slurry explosives (including materials				
transfer, mixing and charging	<ol> <li>and equipment cl</li> </ol>	leaning				
Assessment Method						
See Section 3.						
Section 2 Operational con	ditions and risk m	anagement measures				
Section 2.1 Control of way	war overouro					
Section 2.1 Control of wor	ker exposure					
Physical form of product	Liquid					
Vanour pressure (kPa)	Liquid vapour pres	ssure <0.5 kPa at STP $OC3$				
Concentration of substance	Covers percentage	e substance in the product up to 100 % (unless stated				
in product	differently) G13					
Frequency and duration of	Covers daily expos	sures up to 8 hours (unless stated differently) G2				
use/exposure	5 1					
Other Operational	Assumes use at not more than 20°C above ambient temperature, unless					
Conditions affecting	stated differently. G15. Assumes a good basic standard of occupational					
exposure	hygiene is impleme	ented G1.				
Contributing Scenarios	Specific Risk Mar	nagement Measures and Operating Conditions				
General measures	Control any potent	ial exposure using measures such as contained				
applicable to all activities	systems, properly (	designed and maintained facilities and a good standard				
CS135	of general ventilation	on. Drain down systems and transfer lines prior to				
	breaking containm	ent. Drain down and flush equipment where possible				
	prior to maintenant	Ce. antial far avenaura: Enaura relevant staff are informed				
	of exposure potent	ial and aware of basic actions to minimise exposures:				
	ensure suitable pe	rsonal protective equipment is available: clear up spills				
	and dispose of was	ste in accordance with regulatory requirements: monitor				
	effectiveness of control measures: provide regular health surveillance as					
	appropriate; identif	y and implement corrective actions. G25				
General measures (skin	Avoid direct skin co	ontact with product. Identify potential areas for indirect				
irritants) G19	skin contact. Wear gloves (tested to EN374) if hand contact with					
	substance likely. C	lean up contamination/spills as soon as they occur.				
	Wash off skin cont	amination immediately. Provide basic employee				
	training to prevent	/ minimise exposures and to report any skin effects				
General exposures (closed	Handle substance	EJ within a closed system E17				
systems) CS15						

General exposures (open	Wear suitable gloves tested to EN374 PPE1	5		
systems) CS16		•		
Process sampling CS2	No specific measures identified EI18			
Drum and batch transfers	Use drum pumps or carefully pour from container E64 Wear chemically			
CS8	resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16			
Bulk transfers CS14	Handle substance within a closed system E47 Wear suitable gloves			
Mixing operations (open	Provide extract ventilation to points where en	missions occur E54 Wear		
systems) CS30	chemically resistant gloves (tested to EN374) in combination with 'basic' employee training PPE16			
Production or preparation	Wear suitable gloves tested to EN374 PPE15			
or articles by tabletting, compression, extrusion or pelletisation CS100				
Drum and small package filling CS8	Wear suitable gloves tested to EN374 PPE1	5		
Laboratory activities CS36	No specific measures identified EI18			
Equipment clean down and	Drain down system prior to equipment break	-in or maintenance. E65.		
maintenance CS39	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. PPE16			
Storage CS67	Store substance within a closed system. E84	4		
Additional information on	the basis for the allocation of the identifie	d OCs and RMMs is		
Contained in Appendices 2	2 TO 3 vironmental exposure			
Product characteristics				
Substance is complex LIV/CE	P [PrC3] Prodominantly hydrophobic [PrC4a	1		
Amounto used		].		
Amounts used	d in an air a	0.4		
Fraction of EU tonnage used		0.1		
Regional use tonnage (tonne	es/year)	1.3e4		
Fraction of Regional tonnage used locally		0.0005		
Annual site tonnage (tonnes/year)		6.7		
Maximum daily site tonnage	(kg/day)	1.8e1		
Frequency and duration of	use			
Continuous release [FD2].		0.05		
Emission days (days/year)		365		
Environmental factors not	Influenced by risk management			
Local freshwater dilution fac	tor	10		
Local marine water dilution f	actor	100		
Other given operational co	onditions affecting environmental exposur	e		
Release fraction to air from p	process (initial release prior to RMM)	0.001		
Release fraction to wastewa	ter from process (initial release prior to	0.02		
Release fraction to soil from	process (initial release prior to RMM)	0.01		
Technical conditions and massures at process level (course) to provent release				
Common practices vary acro	as sites thus conservative process release e	stimates used [TCS1]		
Technical onsite condition	and measures to reduce or limit dischar	rges air emissions and		
releases to soil				
Risk from environmental exposure is driven by freshwater sediment [TCR1b].				
I discharging to domestic sewage treatment plant, no onsite wastewater treatment required [ICR9].				
Treat onsite wastewater (ari	8.8			
the required removal efficiency $\geq$ (%)				
If discharging to domestic sewage treatment plant, provide the required 0				
onsite wastewater removal e	efficiency of $\geq$ (%)			

Organisation measures to prevent/limit release from site			
Do not apply industrial sludge to natural soils [OMS2]. Sludge should be	incinerated, contained or		
reclaimed [OMS3].			
Conditions and measures related to municipal sewage treatment pla	ant		
Estimated substance removal from wastewater via domestic sewage	94.1		
treatment (%)			
Total efficiency of removal from wastewater after onsite and offsite	94.1		
(domestic treatment plant) RMMs (%)			
Maximum allowable site tonnage (M <sub>Safe</sub> ) based on release following total	2.9e2		
wastewater treatment removal (kg/d)			
Assumed domestic sewage treatment plant flow (m <sup>×</sup> /d)	2000		
Conditions and measures related to external treatment of waste for	disposal		
External treatment and disposal of waste should comply with applicable r	egulations [ETW3].		
Conditions and measures related to external recovery of waste			
External recovery and recycling of waste should comply with applicable re	egulations [ERW1].		
Additional information on the basis for the allocation of the indentifi	ied OCs and RMMs is		
contained in PETRORISK file.			
Section 3 Exposure Estimation			
3.1. Health			
The ECETOC TRA tool has been used to estimate workplace exposures	unless otherwise indicated.		
G21.			
3.2. Environment			
The Hydrocarbon Block Method has been used to calculate environmenta	al exposure with the Petrorisk		
model [EE2].	•		
Section 4 Guidance to check compliance with the Exposure Scenar	10		
4.1. Health	Dist: Managament		
Predicted exposures are not expected to exceed the Div(N)EL when the			
Measures/Operational Conditions outlined in Section 2 are implemented.	G22.		
Where other Risk Management Measures/Operational Conditions are ad-	opted then users should		
ensure that risks are managed to at least equivalent levels G23			
Available hazard data do not enable the derivation of a DNEL for dermal	irritant effects. G32. Available		
hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk			
Management Measures are based on qualitative risk characterisation. G37.			
4.2. Environment			
Guidance is based on assumed operating conditions which may not be a	pplicable to all sites; thus,		
scaling may be necessary to define appropriate site-specific risk management measures [DSU1].			
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either			
alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite			
technologies, either alone or in combination [DSU3].			

### 9.20.2. Exposure Estimation

#### 9.20.2.1. Human Health

See Appendix 2.a and 2.b

### 9.20.2.2. Environment
# 9.21. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Rubber Production and Processing – Industrial

## 9.21.1. Exposure Scenario

Section 1 Exposure Scena R40, R65, R51/53	ario Title Gas Oils	(vacuum, hydrocracked & distillate fuels) R20, R38,	
Title			
Rubber Production and Proc	essing		
Use Descriptor			
Sector(s) of Use		3, 10, 11	
Process Categories		1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21 Further information on the mapping and allocation of PROC codes is contained in Table 9.1	
Environmental Release Cate	gories	1, 4, 6d	
Specific Environmental Rele	ase Category	ESVOC SpERC 4.19.v1	
Processes, tasks, activitie	s covered		
Manufacture of tyres and ge handling and mixing of rubbe maintenance	neral rubber articles er additives, calenda	s, including processing of raw (uncured) rubber, aring, vulcanising, cooling and finishing as well as	
Assessment Method			
See Section 3.			
Section 2 Operational con	ditions and risk m	nanagement measures	
Section 2.1 Control of wor	ker exposure		
Product characteristics			
Physical form of product	Liquid		
Vapour pressure (kPa)	Liquid, vapour pres	ssure <0.5 kPa at STP. OC3.	
Concentration of substance in product	Covers percentage differently) G13	e substance in the product up to 100 % (unless stated	
Frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently) G2		
Other Operational	Operation is carrie	d out at elevated temperature (> 20°C above ambient	
Conditions affecting	temperature). OC7	'. Assumes a good basic standard of occupational	
exposure	hygiene is impleme	ented G1.	
Contributing Scenarios	Specific Risk Mar	agement Measures and Operating Conditions	
General measures	Control any potent	ial exposure using measures such as contained	
applicable to all activities	systems, properly	designed and maintained facilities and a good standard	
CS135	<ul> <li>of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.</li> <li>Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions. G25</li> </ul>		
General measures (skin irritants) G19	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop. E3 Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities		

	which are likely to lead to substantial aeros	ol release, e.g. spraying. E4			
Bulk transfers (closed systems) CS14, CS107	No other specific measures identified EI20				
Bulk transfers (open systems) CS14, CS108	Wear suitable gloves tested to EN374 PPE15				
Material transfers CS3	Wear suitable gloves tested to EN374. PPE15				
Bulk weighing CS91	Wear suitable gloves tested to EN374.PPE15 No other specific measures				
Small scale weighing CS90	Wear suitable gloves tested to EN374 PPE	15			
Additive pre-mixing CS92	Wear suitable gloves tested to EN374.PPE15				
Calendaring (including	Handle substance within a predominantly c	Handle substance within a predominantly closed system provided with			
Banburys) CS64	extract ventilation E49 Wear suitable glove	s tested to EN374 PPE15			
Pressing uncured rubber blanks <mark>CS73</mark>	Wear suitable gloves tested to EN374 PPE15				
Tyre build-up <mark>CS112</mark>	Minimise exposure by extracted full enclosure for the operation or equipment E61 Wear suitable gloves (tested to EN374), coverall and eye protection PPE23				
Vulcanisation CS70	Provide extract ventilation to material transfer points and other openings E82				
Cooling cured articles CS71	Minimise exposure by partial enclosure of t provide extract ventilation at openings E60	he operation or equipment and			
Production of articles by dipping and pouring CS113	Wear suitable gloves tested to EN374 PPE15				
Finishing operations CS102	Wear suitable gloves tested to EN374 PPE	15			
Laboratory activities CS36	No other specific measures identified EI20				
Equipment clean down and	Drain or remove substance from equipment prior to break-in or				
maintenance CS39	maintenance E81 Wear chemically resistant gloves (tested to type				
01	EN374) in combination with 'basic' employee training PPE16				
Additional information on	Store substance within a closed system. E	od OCs and RMMs is			
contained in Annendices 2	to 3				
Section 2.2 Control of env	rironmental exposure				
Product characteristics					
Substance is complex LIVCE	3 [PrC3] Predominantly hydrophobic [PrC4	ลไ			
Amounts used		uj.			
	l in region	0.4			
Fraction of EU tonnage used		0.1			
Regional use tonnage (tonne	es/year)	1.664			
Fraction of Regional tonnage					
Annual site tonnage (tonnes	/year)	1.664			
Maximum daily site tonnage	(kg/day)	5.2e4			
Frequency and duration of	USE				
Continuous release [FD2].		1000			
Emission days (days/year) 300					
Environmental factors not	Environmental factors not influenced by risk management				
Local freshwater dilution factor 10					
Local marine water dilution factor 100					
Other given operational conditions affecting environmental exposure					
Release fraction to air from process (initial release prior to RMM) 0.01					
Release fraction to wastewater from process (initial release prior to 3.0e-5					
Release fraction to soil from process (initial release prior to RMM) 0.0001					
Technical conditions and measures at process level (source) to prevent release					
Common practices vary across sites thus conservative process release estimates used ITCS11.					
Common practices vary acro	oss sites thus conservative process release	estimates used ITCS11.			
Common practices vary acro Technical onsite condition	oss sites thus conservative process release is and measures to reduce or limit discha	estimates used [TCS1]. arges, air emissions and			

R1b].					
treatment required [TCR9].					
0					
52.8					
0					
0					
er [OMS1] Do not apply					
contained or reclaimed					
ant					
94.1					
94.1					
4.2e5					
2000					
disposal					
egulations [ETW3].					
egulations [ERW1]					
ied OCs and RMMs is					
unless otherwise indicated.					
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].					
Section 4 Guidance to check compliance with the Exposure Scenario					
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. G22.					
Where other Risk Management Measures/Operational Conditions are adopted, then users should					
ensure that risks are managed to at least equivalent levels. G23.					
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. G32. Available					
hazard data do not support the need for a DNEL to be established for other health effects. G36. Risk					
Management Measures are based on qualitative risk characterisation. G37.					
pplicable to all sites; thus,					
scaling may be necessary to define appropriate site-specific risk management measures [DSU1].					
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, ether alone or in combination [DSI 12]. Required removal efficiency for air can be achieved using onsite					
technologies, either alone or in combination [DSU3]. Further details on scaling and control					
or-industries-libraries.html)					

#### 9.21.2. Exposure Estimation

#### 9.21.2.1. Human Health

See Appendix 2.a and 2.b

#### 9.21.2.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# **9.22. Regional Environment Exposure Estimation** See *PETRORISK file* in IUCLID section 13 – "RegionalCSR" worksheet

# **10. RISK CHARACTERISATION**

# 10.1. Manufacture of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

#### 10.1.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.1.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.2. Use of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Intermediate – Industrial

#### 10.2.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.2.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.3. Distribution of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

#### 10.3.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.3.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.4. Formulation & (Re)packing of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 – Industrial

#### 10.4.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.4.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.5. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Coatings – Industrial

#### 10.5.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.5.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.6. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Coatings – Professional

#### 10.6.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.6.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.7. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Oil and Gas Field Drilling and Production Operations – Industrial

#### 10.7.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.7.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.8. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Oil and Gas Field Drilling and Production Operations – Professional

**10.8.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.8.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.9. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Industrial

**10.9.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.9.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.10. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 Lubricants – Professional: Low Environmental Release

**10.10.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.10.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.11. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Lubricants – Professional: High

# **Environmental Release**

**10.11.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.11.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.12. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Metal Working Fluids/Rolling Oils – Industrial

**10.12.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.12.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.13. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Release Agents or Binders – Industrial

**10.13.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.13.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.14. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Release Agents or Binders – Professional

**10.14.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.14.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.15. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Industrial

**10.15.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.15.2. Environment

See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.16. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Professional

#### 10.16.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.16.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.17. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as a Fuel – Consumer

**10.17.1. Human Health** See Appendix 3.c.

10.17.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.18. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 as Functional Fluids – Industrial

**10.18.1. Human Health** See Appendix 3.a. and 3.b.

**10.18.2. Environment** See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.19. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Road and Construction Applications – Professional

**10.19.1. Human Health** See Appendix 3.a. and 3.b.

#### 10.19.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# 10.20. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Explosives Manufacture and Use – Professional

**10.20.1. Human Health** See Appendix 3.a. and 3.b.

**10.20.2. Environment** See PETRORISK file in IUCLID section 13 – "LocalCSR" worksheet

# 10.21. Uses of Gas Oils (vacuum, hydrocracked & distillate fuels) R20, R38, R40, R65, R51/53 in Rubber Production and Processing – Industrial

10.21.1. Human Health

See Appendix 3.a. and 3.b.

#### 10.21.2. Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# **10.22.** Overall exposure (combined for all relevant emission/release sources)

# 10.22.1. Human health (combined for all exposure routes)

See Appendix 3a, 3b & 3c.

#### 10.22.2. Environment (combined for all exposure routes)

Combined exposures can be calculated with information provided on the individual exposure scenarios presented in section 9. However, it is unclear how to define risk management measures resulting from this analysis.

### 10.23. Regional Environment

See PETRORISK file in IUCLID section 13 - "LocalCSR" worksheet

# Appendix 2.b. Qualitative Exposure Estimation

#### **Qualitative Exposure Estimation for R20 substances**

There is a difference of at least a factor of 30 between the short-term (when expressed over 15 minutes) and the long term DNELs (when expressed over 8 hours)), i.e. the long-term DNEL is lower by at least 30x. In these circumstances a quantitative assessment of short-term exposure assessment has not be undertaken based on the following rationale:

For any single short term (ST) event to adversely influence the implementation of the long term (LT) reference value (DNEL when available) in the CSA, then the single ST exposure must be ~30x greater than the LT DNEL. Where the ST exposure might be repeated during the course of an activity, then the contribution made by the ST exposures to the LT average would clearly be greater. Hence, provided daily average exposures are controlled to within the LT reference value, then this will also account for any potential risks arising from ST exposure.

#### Qualitative Exposure Estimation for R38 substances

This general qualitative CSA approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk, i.e. implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the hazard of the substance is negligible, and the risk is considered to be controlled to a level of no concern.

For skin irritation a qualitative risk characterisation was conducted. Handling and storage risk management measures that are generally identified for skin irritation and identified in the Table given in Appendix 3.b.

A review of these RMMs indicates that if the user complies with the following generic statements, risks due to skin irritation can be considered to be adequately controlled:

E3: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if direct hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.

Plus (where there is the potential for additional and significant aerosol exposure, e.g. associated with PROCs 7, 11, 17 or 18):

E4: Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

#### **Qualitative Exposure Estimation for R65 substances**

'Aspiration' means the entry of a liquid substance directly into the trachea and lower respiratory tract. Aspiration of hydrocarbon substances can result in severe acute effects such as chemical pneumonitis, varying degrees of pulmonary injury or death. This property relates to the potential for low viscosity material to spread quickly into the deep lung and cause severe pulmonary tissue damage. Classification of a hydrocarbon substance for aspiration hazard is made on the basis of reliable human evidence or on the basis of physical properties.

The R65 risk phrase (Harmful: may cause lung damage if swallowed) relates to potential for aspiration, a non-quantifiable hazard determined by physico-chemical properties (i.e. viscosity) that can occur during ingestion and also if it is vomited following ingestion. A DNEL cannot be derived. This general qualitative CSA approach aims to reduce/avoid contact or incidents with the substance. However, implementation of risk management measures (RMMs) and operational conditions (OCs) need to be proportional to the degree of concern for the health hazard presented by the substance. Exposures should be controlled to at least the levels that represent an acceptable level of risk such that the implementation of the chosen RMMs will ensure that the likelihood of an event occurring due to the substance hazard is negligible, and the risk is considered to be controlled to a level of no concern.

There are no routine anticipated exposures by ingestion related to any supported uses of the

substance. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific risk. For any substance, classified as R65, these measures should be communicated via the safety data sheet by use of the following phrase:

• Do not ingest. If swallowed then seek immediate medical assistance.

Furthermore it should be noted that where the substance is sold for use in lamp oils and grill lighters by the general public (Consumers), then these must be visibly, legibly and indelibly marked as follows, in accordance with REACH Annex XVII update of 1.4.2010:

- Keep lamps filled with this liquid out of the reach of children.
- Just a sip of lamp oil or even sucking the wick of lamps may lead to life threatening lung damage.

# Appendix 3.b. Qualitative Risk Characterisation

#### **Qualitative Risk Characterisation for R20 substances**

A quantitative assessment of short term exposure has not been undertaken as there is a difference of at least a factor of 30 between the short term (when expressed over 15 minutes) and the long term DNEL (when expressed over 8 hours) DNELs.

#### Qualitative Risk Characterisation for R38 substances

The implementation of relevant RMMs will ensure that the likelihood of an event occurring due to the substance hazard of skin irritation is negligible and the risk is considered to be controlled to a level of no concern.

For the skin irritation (R38) hazard a qualitative risk characterisation has been conducted consistent with the considerations and risk management measures identified in the Table below.

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
Skin Irritation (R38)	• Liquid	R38 / H315	<ul> <li>S24: Avoid contact with skin</li> <li>Prevention:</li> <li>P264: Wash  thoroughly after handling.</li> <li>P280: Wear protective gloves.</li> <li>Response:</li> <li>P280: Wear protective gloves/protect ive clothing/eye protection/fac e protection.</li> <li>P302 + P352: IF ON SKIN: Wash with plenty of soap and water.</li> <li>P321: Specific treatment (see on this label).</li> <li>P332 + P313: If skin irritation occurs: Get medical advice/attenti</li> </ul>	<ul> <li>Implementation of basic standards of occupational hygiene;</li> <li>Avoid direct skin contact with product;</li> <li>Wear gloves (tested to EN374) if direct hand contact with the substance is likely; wash off skin contamination immediately;</li> <li>Avoid splashes and spills;</li> <li>Avoidance of contact with contaminated tools and objects;</li> <li>Clean up contamination/spills as soon as they occur;</li> <li>Regular cleaning of equipment and work area;</li> <li>Ensure suitable management/supervision is in place to check that the RMMs in place are being used correctly and OCs followed;</li> <li>Train staff on good practice to prevent / minimise exposures and to report any skin problems that may develop;</li> <li>Adopt good standards of personal skin hygiene.</li> <li>Where activities may lead to aerosol release e.g. spraying, then additional skin protection measures such as impervious suits and face shields may be required.</li> </ul>

P362 : Take off contaminated clothing and wash before re-use	
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The outcome of the CSA is displayed within the relevant Exposure Scenarios by the inclusion of the general phrase

E3: Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if direct hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin effects that may develop.

Together with (where there is the potential for additional and significant aerosol exposure): E4: Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.

#### Qualitative Risk Characterisation for R65 substances

The implementation of relevant RMMs will ensure that the likelihood of an event occurring due to the aspiration hazard of the substance is negligible and the risk is considered to be controlled to a level of no concern.

considerations and risk management measures identified in the Table below.				
Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
Aspiration Toxicity (R65)	• Liquid	R65 / H304	<ul> <li>Response:</li> <li>(S2): Keep out of the reach of children (for dangerous products sold to the general public must include this safety phrase)</li> <li>S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label</li> <li>P102: Keep out of reach of children.</li> <li>P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</li> <li>P331: Do NOT induce vomiting. Storage:</li> </ul>	<ul> <li>Worker</li> <li>Do not ingest</li> <li>Implementation of basic standards of occupational hygiene</li> <li>Avoid splashes and spills</li> <li>Avoidance of contact with contaminated tools and objects</li> <li>Management/supervision to check that the RMMs in place are being used correctly and OCs followed</li> <li>Training for staff on good practice</li> <li>Good standard of personal hygiene</li> <li>Consumer</li> <li>Do not ingest</li> <li>For lamp oils and grill lighters, follow the provisions of REACH – Annex XVII, including:</li> <li>Marketing in black opaque containers not exceeding 1 litre</li> <li>Labelling with specific safe use instruction</li> </ul>

For aspiration hazard a qualitative risk characterisation has been conducted consistent with the considerations and risk management measures identified in the Table below.

Hazard	Material	Risk / Hazard Phrase	Examples of Relevant S Phrases and P Statements	Components of the Qualitative Risk Assessment
			<ul> <li>P405: Store locked up.</li> <li>Disposal:</li> <li>P501 : Dispose of contents/container to in accordance with local/regional/ national/internation al regulations (to be specified)</li> </ul>	

For any substance, classified as R65, these risk management measures should be communicated via the safety data sheet by use of the following phrase:

Do not ingest. If swallowed then seek immediate medical assistance.