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STAZIONI SPERIMENTALI PER L'INDUSTRIA

AREA OLI E GRASSI

CEN TC 19 WG 33 Bio-Lubricants

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Milano, 10 Febbraio 2016

Draft Agenda for 21st CEN/TC 19/WG 33 meeting

Draft Agenda Topics

1 Welcome, administrational and organizational items

2 Adoption of agenda

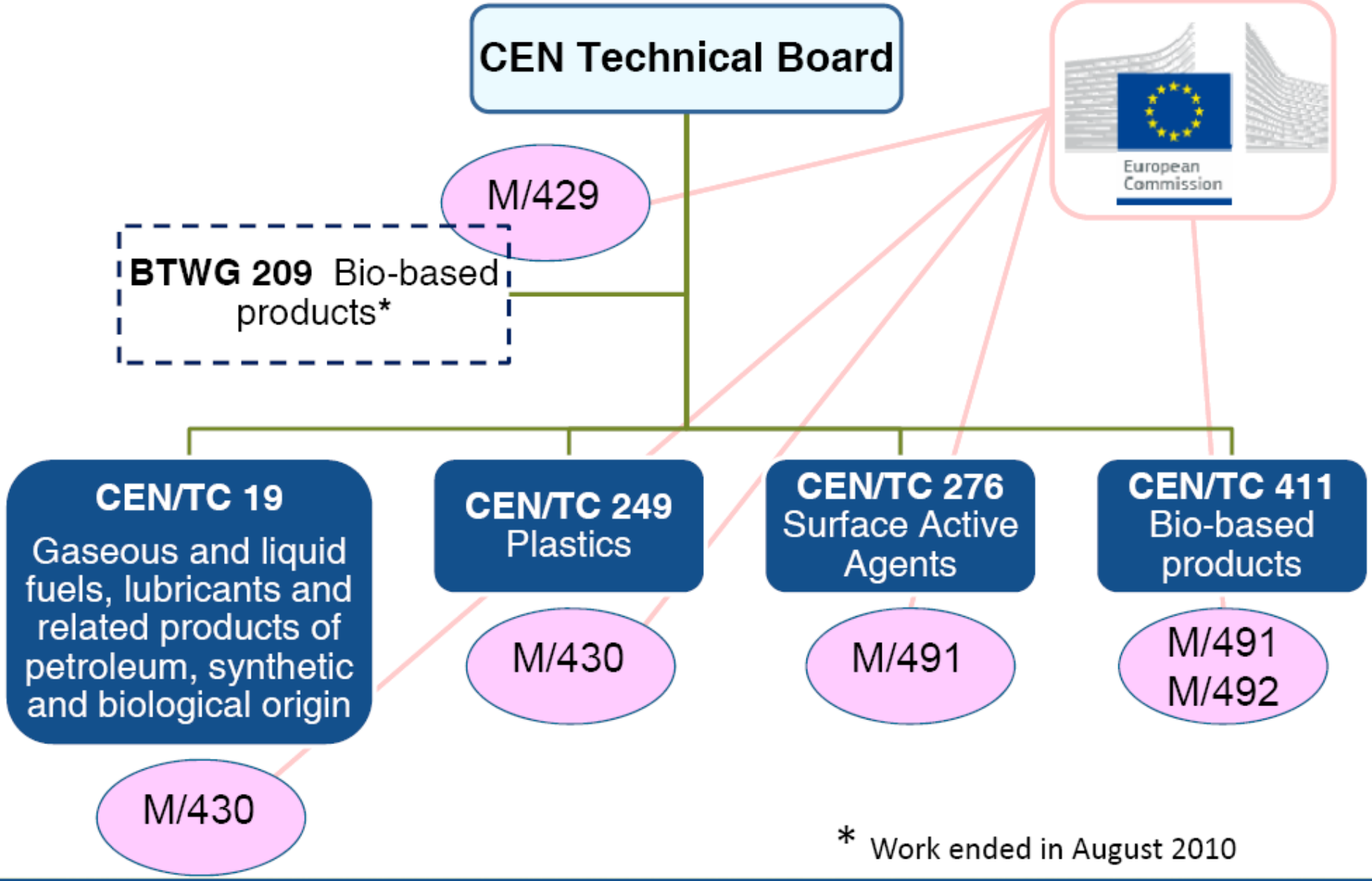
3 Adoption of the minutes of the 20th meeting

4 Technical discussion

- 4.1 Status of formal vote on EN 16807
- 4.2 WG 33 task force "Biodegradation Testing" – status of work
- 4.3 NWIP "Standard for evaluating of the bioaccumulative potential of formulated bio-lubricants": Preliminary status and discussion about targets and further processing
- 4.4 Information about ongoing work of CEN TC 411 "Bio-based products"
  - WG 1: Terminology for bio-based products
  - WG 3: Determination of bio-based content
  - WG 4: LCA and sustainability
  - WG 5: Certification and declaration tools
- 4.5 Information about publication of TAXUD: Tariff and Statistical Nomenclature of Bio-Lubricants (CN / PRODCOM)
- 4.6 Upcoming discussions about the revision process for the European Ecolabel for Lubricants: Possible support by WG 33

5 Time and place of next meeting

Bio-based products: CEN Technical Bodies



* Work ended in August 2010

CEN/TC 411 "Bio-based products"

→ Created in May 2011

→ Scope: standards for bio-based products covering horizontal aspects:

- consistent terminology
- sampling
- certification tools
- bio-based content
- application of and correlation towards life cycle analysis
- sustainability criteria for biomass used & final products
- aspects where further harmonisation is needed at horizontal level

→ Focus on bio-based products, other than food & feed and bio-mass for energy

→ Also development of standards for bio-solvents according to M/491

CEN/TC 411 structure

CEN/TC 411
Chairman: F. Petit
Secretariat: NEN

- WG 1 Terminology
  Convenor: H. Omloo
- WG 2 Bio-solvents
  Convenor: A. Brossier
- WG 3 Bio-based content
  Convenor: F. Bakker
- WG 4 Sustainability criteria, life cycle analysis and related issues
  Convenor: S. Eriksson
- WG 5 Certification and declaration tools
  Convenor: H. Vooijs

4.3.1.WG1, Terminology for bio-based products

FprEN 16575 is available now, it will be attached to the minutes (Att. 9)

4.3.2.WG2, solvents

FprCEN/TS 16766: The text is currently finalized, containing a special suggestion for bio-based products: Depending on three levels of the minimum bio-based carbon content of 25, 50 and 90% three solvent classes A, B or C are defined.

4.3.3.WG3, Determination of bio-based content

prEN 16640: the method is currently under ballot.

prEN 16785-1, combination of $^{14}C14$ and element analysis – enquiry finished .

prEN 16785-2, determination of the bio-based content using the material balance method – enquiry finished

4.3.4.WG 4: LCA and sustainability

prEN 16760 (Life Cycle Assessment) and 16751 (Sustainability criteria) are in the stage of Formal Vote

A draft standard on guidelines for Life Cycle Inventory (LCI) for the End-of-life phase is under development; it might be difficult to define a horizontal standard due to the quite different applications.

4.3.5.WG 5: Certification and declaration tools

Two European Standards are under development:
- Draft prEN 16848 "Bio-based products — Template for B2B reporting and communication of characteristics — Data sheet"
- Draft prEN "Bio-based products — B2C reporting and communication of characteristics — Requirements"

Pr EN 16807:2014 Liquid petroleum products – Biolubricants - Criteria and requirements of bio-lubricants and bio-based lubricants

Il documento è stato preparato sotto il mandato M/430 dato al CEN dalla Commissione Europea e dall'European Free Trade Association per lo sviluppo di standards europei per i bio-lubrificanti in relazione agli aspetti-criteri di un BIO-BASED product

Il documento è stato preparato dalla Commissione tecnica CEN/TC 19 "Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin"

Il documento è ora in approvazione al CEN

Presunta data di pubblicazione: Marzo-Aprile 2016

Pr EN 16807:2014 Liquid petroleum products – Biolubricants - Criteria and requirements of bio-lubricants and bio-based lubricants

COSA HA IMPEDITO LA CRESCITA NEL MERCATO DEI BIOLUBRIFICANTI?

Mancanza di Standards e di un linguaggio tecnico comune per definire i biolubrificanti

Importanza di avere una generale, non controversa e ben accettata descrizione e definizione di un biolubrificante che sia uniformemente valida per tutti i tipi di lubrificanti e che includa i parametri di:

- **Biodegradabilità**
- **Rinnovabilità**
- **Tossicità**
- **Performance**

Standards e definizioni sono disponibili solo per singoli gruppi di lubrificanti: fluidi idraulici (ISO 15380), oli per turbine a gas e vapore (ISO 8068) e prodotti Ecolabels

Cronologia delle specifiche /direttive dei biolubrificanti

1975 - Olio per motori a due tempi

1989 - Blue Angel German ecolabel per speciali gruppi di lubrificanti

2002 - ISO 15380 – Specifications for environmentally acceptable hydraulic fluids

2005 - Eu Ecolabel for Lubricant (EEL) Direttiva 2005/360/EC

- *category 1: Hydraulic fluids and Tractor trasmission oils*
- *category 2: lubricating greases and stern tube greases*
- *category 3: chain saw oils, mould release agents, wire rope lubricants and other total loss lubricants*
- *category 4: e stroke engine oils*
- *category 5: industrial and marine gear oils*

2011 - Revisione EEL –Direttiva 2011/381/EU per gruppi speciali di lubrificanti

2011 - CEN/Technical Report 16227 General definition of all kind of Bio-lubricants

2016 - pr EN 16807:2014 Liquid petroleum products – Biolubricants - Criteria and requirements of bio-lubricants and bio-based lubricants

2016 – *Proposta di Revisione EEL*

Espressioni comuni & pareri sui biolubrificanti…..

Biodegradabile, bio-based, eco-labelled, compatibile con l'ambiente o "environmentally friendly", lubrificanti da fonte rinnovabile, lubrificante derivato da biomasse, lubrificante biocompatibile….

BIO = buono per l'ambiente….buono per la salute
BIO+ LUBRIFICANTE = biodegradabile….origine naturale…biologico
BIO + LUBRIFICANTE = biocompatibile senza effetti fisiologici tossici o negativi
per i tessuti umani, animale e vegetali

Spesso i BIO LUBRIFICANTI sono percepiti come prodotti a basse performance…..

Esempi d'uso del termine "BIO" di prodotti presenti sul mercato, così come l'European Lead Market Initiative ("LMI") li definisce

Origine della materia	**Biodegradabilità**	**Esempi**	**A volte l'espressione usata per il prefisso "bio"**
Rinnovabile	Rapidamente biodegradabile *	Olio di colza Trimetilolpropano oleato (TMP-O)	Biodegradabile* e bio-based**
Non rinnovabile	Biodegradabile*	Di-isotridecyl-adipato (DITA), 2 ethyl hexyl adipate, PAO2	Biodegradabile*
Rinnovabile	"inherently" or non biodegradable	Idrocarburi dal processo "Biomassa a liquido" (BtL)	Bio-based**
Non rinnovabili	Non biodegradabili	Oli bianchi per lubrificanti food grade	Biocompatibili

* in accodo a OECD 301; ** in accordo a EN 16575

"Biobased" non implica "biodegradabile". In più "biodegradabile" non implica l'uso di un materiale "bio-based"

prEN 16807: 2014: Scopo dello standard

- specifica il termine Bio-lubrificante e qualifica il termine BIO-BASED PRODUCT anche per i lubrificanti

- definisce i criteri e i requisiti per i bio-lubrificanti. Essi sono intesi come requisiti orizzontali per tutti i tipi di bio-based lubrificanti e devono essere visti come requisiti minimi (mentre l'EEL riferisce a specifiche famiglie di biolubrificanti)

- descrive i metodi pertinenti alla caratterizzazione di bio-lubrificanti

- nello standard i termini bio-lubricant e bio-based lubricant sono da considerare equivalenti

Approach Businnes to consumer comunication: «B2C»

La norma è stata studiata puntando l'attenzione al Consumatore finale:

- Sono i criteri citati per i "biolubrificanti" potenzialmente dimostrabili per un prodotto formulato….cioè quello che acquisto sul mercato?

- Ogni dichiarazione riguardo la biodegradabilità, tossicità e rinnovabilità dovrebbe essere misurata sul prodotto finale nelle mani del consumatore

La base della politica chimica in Europa si basa sul testare i singoli componenti e non le miscele: gli effetti sull'uomo e sull'ambiente sono valutati su specifici Chemicals e non sulle miscele fatte con essi. Tuttavia la combinazione di singoli componenti ben testati in una miscela potrebbe creare effetti sinergici o antagonisti.
Il punto di vista della miscela è il punto di vista del consumatore finale, anche se i test di biodegradabilità e di bioaccumulo per le miscele potrebbero essere difficili da interpretare

prEN 16807 standard:

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BIODEGRADABILITA'

Metodi per la biodegradabilità di lubrificanti

Test Method	Corrisponding OECD test method	Short description – relation to other test methods
EN ISO 9439	OECD 301B	Modified Sturm test, aerobic degradation, ultimate biodegradation (for non water soluble substances)
EN ISO 14593	OECD 310	CO2 Headspace Test (for non water souble substances)
ISO 16221	OECD 306	Biodegradtion in Seawater(for non water soluble substances, only to be used for marine environments)
EN ISO 9408	OECD 301F	Manometric respirometric test (for water soluble substances

-Tutti gli Ecolabel in vigore, Regolamenti e raccomandazioni utilizzano questi metodi ISO o OECD che includono anche i limiti per la "ready biodegradation"

- Dichiarazione di biodegradabilità in altri ambienti, come il terreno, mancano di standard appropriati, sebbene essi siano in studio

- I dati di precisione per la biodegradabilità sono in studio

6.3 Biodegradability

The biodegradability of the finished lubricant shall be:

— ≥ 60 % according to EN ISO 14593 or EN ISO 9439 or ISO 16221 or EN ISO 9408 for oils, or

— ≥ 50 % according to EN ISO 14593 or EN ISO 9439 or ISO 16221 or EN ISO 9408 for lubricating greases.

Ecotossicità

Table 3 — Test methods for testing the aquatic toxicity of (not water soluble) lubricants

	Test method	Corresponding OECD test method	Short description – relation to other test methods
Alga	EN ISO 8692	OECD 201 [7]	A fresh water algal growth inhibition test method with unicellular green algae for aquatic systems (measurement of chlorophyll-fluorescence and determination of EC_{10} and EC_{50} values)
Alga	EN ISO 10253		A marine algal growth inhibition test with Skeletonema costatum and Phaeodactylum tricornutum; only to be used for marine environments
Daphnia	EN ISO 6341	OECD 202 [8]	This acute toxicity test method concerning the aquatic environment, determines the inhibition of the mobility of Daphnia magna straus (water flea). Test results are EC_{10}, EC_{20} and EC_{50} values.
Copepoda	ISO 14669		Similar to the above, determines the acute lethal toxicity to marine copepods (Copepoda, Crustacea); only to be used for marine environments
Pesce	EN ISO 7346-1	OECD 203 [9]	Determination of the acute lethal toxicity of substances to a fresh-water fish, performed on the Goldorfe (Leuciscus idus). Static method. Test method results are the LC_0, LC_{50} and LC_{100} values.

Per le miscele, come i lubrificanti, si applica la Classificazione CLP 1272/2008/EC

Se un lubrificante non soddisfa i requisiti riportati in 6.4 del prEN 16807

deve essere classificato come pericoloso per l'ambiente, con i simboli di pericolo

"dead fish/dead tree" (simbolo GHS 09)

Le miscele possono essere valutate:

- metodo convenzionale o di calcolo, con limiti per i singoli componenti
- con metodi sperimentali sulla miscela, facendo i test su tutte e tre le specie (algae, daphnia e pesce)

Una miscela con LC50 e EC50 > 100 mg/l per tutte e tre le specie non è considerata pericolosa per l'ambiente anche se lo potrebbe essere con il metodo di calcolo convenzionale

6.4 Ecotoxicity

The finished lubricant should not be labelled as "Dangerous to the environment" according to CLP Directive 1272/2008/EC [10]. This shall be proven by testing according to:

— EN ISO 8692 (fresh water algal test) or EN ISO 10253 (marine algal test) — EC_{50} > 100 mg/l, and

— EN ISO 6341 (Daphnia) or ISO 14669 (marine copepods) — EC_{50} > 100 mg/l, and

— EN ISO 7346-1 (fish) — LC_{50} > 100 mg/l

NOTE 1: Water soluble fluids shall be tested according to the test methods stated. Poorly water soluble fluids shall be prepared by using adapted fractions according to ASTM D 6081.

Biobased Carbon Content

Allo stato dell'arte la determinazione della sostanza rinnovabile in una miscela, quale è il lubrificante, viene determinata con la misura del C14 utilizzando il metodo ASTM D6866

E' stata chiesta una speciale autorizzazione al CEN per inserire il metodo ASTM D 6866 in un metodo EN

6.2 Bio-based content

The bio-based content according to this standard is synonymous to the bio-based carbon content and has to amount to at least 25 % according to ASTM D 6866 (^{14}C analysis).

Fit for purpose / Fit for use

La performance è cruciale per l'utilizzatore finale.

La performance può solo essere specificata individualmente per ciascuna applicazione: non è possibile pensare ad uno "standard orizzontale" che copra tutte le famiglie di lubrificanti.

Si riporta l'Annesso B con i riferimenti di standards richiesti per la qualificazione tecnica

Annex B
(normative)

Bio-lubricants - groups of application

All parts of ISO 6743 [18] establish the general classification system, which applies to lubricants, industrial oils and related products called class L. Within class L 18 families of products are defined to cover all applications for which lubricants are used. Not all families have been issued. The parts 16, 17 and 18 of ISO 6743 are under preparation. Some of these 18 families and some of their subdivisions are shown below, mainly those product groups with some relevance to bio-lubricants. Table B.1 summarizes nearly all application types of lubricants and their international specifications, of which only two (ISO 15380, ISO 8068) contain explicit requirements with regard to toxicity and biodegradability. National specifications are not covered in this table.

Product group	Main use today	Family	International Specification
Industrial	Hydraulic oils	H	ISO 11158 EN ISO 12922[a] ISO 15380[b]
	Air compressor oils	D	
	Gas compressor oils	D	
	Industrial gear oils	C	ISO 12925-1
	Slideway oils	G	ISO 19378
	Bearing and circulating system oils	F	
	Refrigerator compressor oils	D	
	Steam and gas turbine oils	T	ISO 8068[b] ISO 10050[c]
	Machine oils	L	ISO 19378
	Insulating liquids	N	IEC 61039
	Concrete release agents – oil types		
	Concrete release agents – emulsion types		
	Chainsaw oils	A	

Product group	Main use today	Family	International Specification
Automotive	Engine oils — petrol (gasoline) engine oils — diesel engine oils — 2-stroke engine oils — gas turbine engine oils	E	ISO 24254 ISO 13738
	Automotive gear oils — manual transmission oils — automatic transmission fluids		
	Brake fluids		
	Mobile hydraulic fluids		
	Air filter oils		
	Tractor (one lubricant for all systems) — Universal Tractor Transmission Oil – UTTO — Super Tractor Oil Universal – STOU		
	Crosshead cylinder oils		
	Crosshead crankcase oils		
	Trunk piston engine oils		
	Stern tube lubricants		
Metalworking	Cutting fluids – water-miscible	M	ISO/TS 12927
	Cutting fluids – not water-miscible	M	ISO/TS 12927
	Forming oils	M	ISO/TS 12927
	Rust preventives	M	ISO/TS 12927
	Quenching oils	M	ISO/TS 12927
Temporary protection against corrosion		R	ISO/TS 12928
Greases	Roller bearings	X	ISO 12924
	Cars, trucks, construction vehicles	X	ISO 12924
	Steel mill	X	ISO 12924
	Mining	X	ISO 12924
	Railroad, railway	X	ISO 12924
	Gears	X	ISO 12924
	Food-grade applications	X	ISO 12924
	Textile machines	X	ISO 12924

[a] Incl. HFDU ester based fire-resistant hydraulic fluids
[b] Incl. toxicity requirements
[c] Only for triaryl phosphate ester turbine control fluids

Task Force "Biodegradation"

- Sub group (TF) of CEN TC19/WG33 for the development of a suitable but robust and sufficiently precise biodegradation test
- WG 33 members were asked to identify and nominate, in their country, experts with good experience in degradability testing.
- The number of participants is sufficient, three meetings up to now
- The TF's activities are discussed and coordinated with the German standardisation group DIN 51828-1 (Basics)
- Two draft EN:
  → Liquid petroleum products — Bio-lubricants — Determination of aerobic biological degradation of fully formulated lubricants in an aqueous solution — Test method based on O_2 consumption
  → Liquid petroleum products — Bio-lubricants — Determination of aerobic biological degradation of fully formulated lubricants in an aqueous solution — Test method using detection of CO_2-production resp. detection of O_2 uptake

Nuove proposte del WG 33

- New Work Item Proposal: Standard per valutare il potenziale bioaccumulo di prodotti formulati biolubrificanti

Raccolta di informazioni, ricerca di esperti nei vari Paesi europei per valutare la fattibilità del progetto, soprattutto pensando di partire con la valutazione di un prodotto formulato

- Revisione EEL per i lubrificanti: possibile supporto dell'WG33