



History of CEN/EN 343 Solid Recovered Fuels

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Background

- ***Fuel and Energy Recovery*** 1997 - 1998
EC JOULE-THERMIE: DIS-1375-97-FI
- ***Waste to Recovered Fuel*** 1999 - 2002
EC Fifth Framework Program: NNE5-1999-533

CEN BT/TF 118 *Solid Recovered Fuels* 2000 - 2002 Work Programme and Report (CEN/TR 14745:2003)

- UNI 9903 *Non mineral refuse derived fuels RDF* 1992 (IT)
- SFS 5875 *Solid Recovered Fuel - Quality Control System* 2000 (FIN)
- RAL-GZ 724 *Quality Assurance of Solid Recovered Fuels* 2001 (D)



Mandate 325 Solid Recovered Fuels 1(2)

- First step: **Develop a set of Technical Specifications (TSs)**, i.e. “pre-standards”.
- Second step: **Transform this set of TSs into European Standards (ENs)**.
- These ENs shall be presented as a package, after validation of a minimum number of TSs as agreed between the Commission and CEN BT.



Mandate 325 Solid Recovered Fuels 2(2)

The standards shall include:

- All standards listed in the Work Programme as developed by CEN/TF 118 Solid Recovered Fuels (equal to those of CEN/TC 335 Solid Biofuels).
- A set of standards on the [determination of the biodegradable fraction](#), as defined in Directive 2001/77/EC and/or [the biogenic fraction](#) of SRF and the higher and lower heating values of these fractions. CEN will provide the Commission ... with a report on the relative difference between these two fractions of waste in order to decide whether there is a need to develop two different standards or only one.

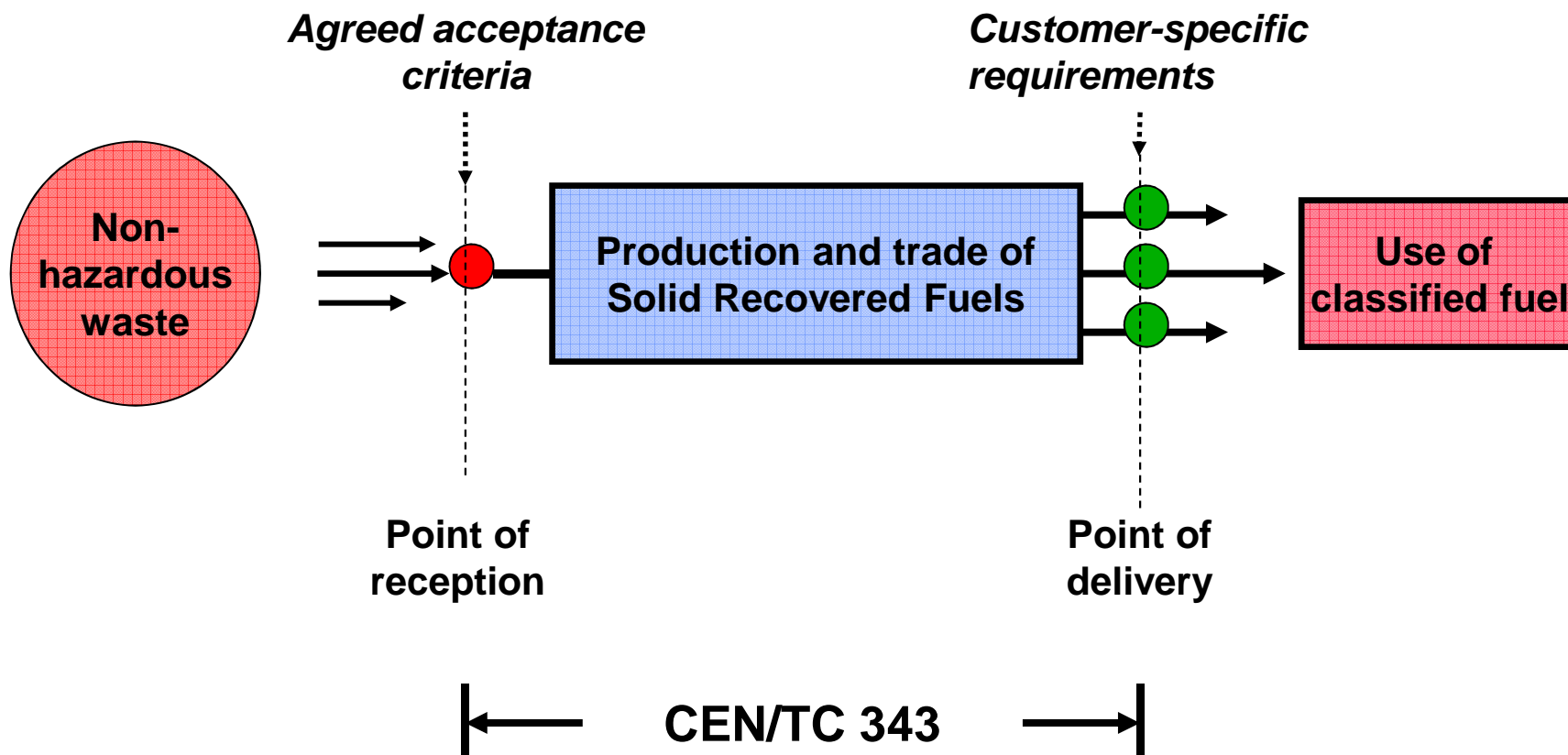


CEN TC 343 Solid Recovered Fuels

- Established on **13 March 2002**
- Secretariat held by the Finnish Standards Association
- Scope
“Elaboration of Standards, Technical Specifications and Technical Reports on solid recovered fuels (RDF, etc.) prepared from non-hazardous waste to be utilised for energy recovery in waste-incineration or co-incineration plants, excluding those fuels that are included in the scope of CEN/TC 335 Solid Biofuels”



European Standardisation of Solid Recovered Fuels





Organization

27 Work Items grouped in 5 Working Groups

1. Terminology and Quality Assurance (IT)
2. Fuel specifications and classes (SE)
3. Sampling and supplementary test methods (NL)
4. Physical/mechanical tests (D)
5. Chemical tests (IT)



Important issues

- WG1: Quality Management System based on ISO 9001
- WG2: Classification system and Specification template
- WG3: Determination of biodegradable/biogenic = biomass content
- WG4: Report on determination of combustion behaviour
- WG5: Determination of metallic Aluminium



Classification system of CEN/TS 15359

| Classification Property | Statistical Measure | Unit | Classes | | | | |
|---------------------------|-----------------------------|------------|-------------|-------------|-------------|-------------|-------------|
| | | | 1 | 2 | 3 | 4 | 5 |
| Net calorific value (NCV) | Mean | MJ/kg/(ar) | ≥ 25 | ≥ 20 | ≥ 15 | ≥ 10 | ≥ 3 |
| Classification Property | Statistical Measure | Unit | Classes | | | | |
| | | | 1 | 2 | 3 | 4 | 5 |
| Chlorine (Cl) | Mean | % (d) | $\leq 0,2$ | $\leq 0,6$ | $\leq 1,0$ | $\leq 1,5$ | ≤ 3 |
| Classification Property | Statistical Measure | Unit | Classes | | | | |
| | | | 1 | 2 | 3 | 4 | 5 |
| Mercury (Hg) | Median | mg/MJ (ar) | $\leq 0,02$ | $\leq 0,03$ | $\leq 0,08$ | $\leq 0,15$ | $\leq 0,50$ |
| | 80 th percentile | mg/MJ (ar) | $\leq 0,04$ | $\leq 0,06$ | $\leq 0,16$ | $\leq 0,30$ | $\leq 1,00$ |



Validation of a set of TSs

- 26 Technical Specifications (TS) were published **by 2006**.
- These were validated within the EU funded multi-stakeholder project **QUOVADIS** (Quality Management Organisation, Validation of Standards, Developments and Inquiries for SRF) lead by Cesi Ricerca, Italy.
- The validation focussed on TSs on QMS, sampling, sample preparation as well as physical and chemical test methods, including inter-laboratory Round Robin and Robustness evaluations.



Mandate M-325 fulfilled in February 2012

- Most ENs were ready for publication by **February 2011**
- However, ECOS (European Citizens Organisation for Standardization) made an appeal against the ratification of EN 15359 Specifications and Classes, claiming that the Classification System was too wide. CEN/BT requested TC to review the standard. After long discussions between stakeholders and within WG2, CEN/TC343 dealt with the issue at its 10th meeting in **February 2012**. As a result of the review, TC 343 decided unanimously to maintain the Classification System unchanged and the standard was published.
- Mr. Riesgo, at above meeting, informed that the Commission accepts all standards and considers Mandate M-325 to be fulfilled.



Present status of TC 343 1(5)

■ 6 Technical Reports (CEN/TRs) have been published, of which one Mandated.

- 14980:2004 Report on the relative difference between biodegradable and biogenic fractions of SRF (Mand.)
- 15441:2006 Guidelines on occupational health aspects
- 15508:2006 Key properties on solid recovered fuels to be used for establishing a classification system
- 15591:2007 Determination of the biomass content based on the ^{14}C method
- 15716:2008 Determination of combustion behaviour
- 15404:2010 Methods for the determination of ash melting behaviour by using characteristic temperatures



Present status of TC 343 2(5)

■ 19 European Standards (EN) have been published:

- 15357 Terminology, definitions and descriptions
- 15358 Quality management systems
- 15359 Specifications and classes
- 15400 Method for the determination of calorific value
- 15402 Determination of content of volatile matter
- 15403 Determination of ash content
- 15407 Methods for the determination of C, H and N content
- 15408 Methods for the determination of S, Cl, F and Br content
- 15410 Methods for the determination of major elements
- 15411 Methods for the determination of trace elements



Present status of TC 343 3(5)

■ (Published ENs cont.):

- 15414-3 Determination of moisture content using the oven dry method
- 15415-1 Determination of particle size distribution
- 15415-2 Maximum projected length method for large dimension particles (not Mandated)
- 15415-3 Method by image analysis for large dimension particle (not Mandated)

- 15440 **Methods for the determination of biomass content**



Present status of TC 343 4(5)

■ (Published ENs cont.):

- 15442 Methods for sampling
- 15443 Methods for the preparation of the laboratory sample
- 15413 Methods for the preparation of the test sample from the laboratory sample

- 15590 Determination of potential rate of microbial self heating using the real dynamic respiration index (not Mandated)



Present status of TC 343 4(5)

■ 7 Technical Specifications (TS) have been published:

- 15401 Determination of bulk density
- 15405 Determination of density of pellets and briquettes
- 15406 Determination of bridging properties of bulk material
- 15412 [Methods for the determination of metallic Aluminium](#)
- 15414-1 Determination of total moisture by a reference method
- 15414-2 Determination of total moisture by a simplified method
- 15639 Determination of mechanical durability of pellets



The near future of TC 343

At its 11th meeting on 12 June 2013, TC 343 decided:

- to appoint Mikko Talola, L&T, as new TC Chairman
- all WGs will remain active. WGs 2 and 3 presently without convenor
- all TSs will remain TS for a period of 3 years
- all ENs will be reviewed by 2016