

# Zpráva o činnosti TC336/WG2 za rok 2024

Zpráva shrnuje informace ze zasedání TC336/WG2 v roce 2024 a informace týkající se dění na národní úrovni.

Součástí zprávy jsou tyto body:

1. Informace z CEN/TC336/WG2
2. Informace z TNK 134
3. Informace z Týmu 7
4. Informace o kruhových zkouškách FR

## **1. Informace z CEN TC/336/WG2**

V roce 2024 se uskutečnila dvě zasedání TC336/WG2. Jarní zasedání (51.) proběhlo v Německu v Berlíně ve dnech 15.4.-16.4.2024. Druhé zasedání se konalo ve dnech 07.10.-08.10.2024 (52.) v Londýně ve Velké Británii.

Účast: Obou zasedání se účastnil zástupce TC336/WG2 za ČR.

### **Normalizace**

V rámci skupiny *TG Harmonized standards* (TG HS) byly historicky diskutovány 4 scénáře z hlediska pokračování v přípravě specifikačních norem. V TG HS bylo dohodnuto, že se bude pokračovat scénářem 1-2 viz níže.

- **Base case:** full comprehensive documents more or less in line with the initial draft SReq submitted by TC 336 to EC in May 2020 with no parallel complementary non-harmonized specification standards.
- **Case 1:** keep more or less the same characteristics as in current cited documents (just by cleaning up any obsolete or non-relevant specifications) and develop parallel complementary non-harmonized specification standards for all new or experimental specifications such as rheological specifications.
- **Case 2:** simplify the harmonized standards to one or very few characteristics (for example only PEN) and transfer all the rest in new parallel complementary non-harmonized specification standards along with all new or experimental specifications.
- **Case 3:** same as Case 2 but streamline all bituminous binders in only one draft hEN (such a streamlining was proposed in the SReq of SG1).

#### **Obrázek 1 Možné scénáře vývoje na poli standardizace (diskutováno v rámci TG HS)**

To v překladu znamená, že v hEN zůstanou pouze parametry jako bod měknutí, penetrace a koheze. Do hEN bude začleněn i postup dle EN 14771 (BBR), což byl požadavek zejména Německa. Ostatní parametry budou zařazeny do neharmonizované části nebo se s nimi dále nepočítá. Návrh harmonizované specifikace pro PMB a silniční asfalzy je uveden níže na obrázku 2.

Essential characteristics (including proxies, if any)	Method considered	Properties	Essential characteristics (including proxies, if any)	Method considered	Properties
Consistency at intermediate service temperatures	PEN25°C		Consistency at intermediate service temperatures	PEN25°C (1A) or PEN15°C (2A) or ?(3A)	
Consistency at elevated service temperatures	SP		Consistency at elevated service temperatures	SP(1A) or DV60(2A) or KV60 (3A)	
Durability of consistency at intermediate service temperatures	RTFOT+PEN25°C		Durability of consistency at intermediate service temperatures	RTFOT+PEN(1A) or RTFOT+?(2A) or TFOT+?(3A)	
Durability of consistency at elevated service temperatures	RTFOT+SP		Durability of consistency at elevated service temperatures	RTFOT+SP(1A) or RTFOT+visco ratio(2A) or TFOT+visco ratio (3B)	
Durability of consistency at low service	RTFOT+PAV+BBR	Critical Stiffness Ts=300MPa	Durability of consistency at low service temperatures	RTFOT+PAV+BBR (1A+2A+3A?)	Critical Stiffness Ts=300MPa
Impact Cohesion (1)	Vialit	Energy			
Tensile Cohesion (2)	FD	Full energy between 0 and break			

NB : BBR will have to be taken off Non harmonised part

NB2 : Tensile cohesion here is considered on non aged binder so different from TG 15 work

NB : Ts (BBR) will have to be taken off Non harmonised part

**Obrázek 2 Návrh harmonizované specifikace pro silniční asfalty (vpravo) a polymerem modifikovaný asfalt (vlevo) (TG Harmonized standards, N1334)**

Členem TG HS se stal Tomáš Koudelka (TKO), který je rovněž vedoucím TG v rámci WG2, která bude připravovat podklady pro TG HS a pro WG2. Podklady jsou SReq z roku 2020 a výstupy z TG14 a TG15 (WG1) a starší dokumenty, např. EN 13808:2013, Mandát M/124 nebo odpověď na mandát z roku 2001. TKO připravil pro jednání v Berlíně i Londýně dokumenty, kde je naznačeno, jak se bude postupovat. V Londýně byl představen záměr, jak vyřešit problémy s použitím jedné zkušební metody pro „více“ základních charakteristik. Pojiva v různém stupni zestárnutí a odpovídající vlastnosti byla nazvána dle stupně zestárnutí pojiva viz obrázek 3 níže (pozn. na obrázku chybí vlastnosti pojiv po destilaci, které nejsou např. v ČR používány). Prezentace postupu tvorby hEN z hlediska WG2 je uveden v příloze tohoto dokumentu.

## Proposal of how to define each binder state (Harmonized part)

Methods to treat binders from emulsions (emulsion's residue), version 04.10.2024

	Essential characteristics	Procedure	Note - cutbacks
EN 13074-1	Initial binder state	Consistency at intermediate service temperatures	Cutbacks, FV (Fm – distillation)
	Initial binder state	Consistency at elevated service temperatures	
	Initial binder state	Hardnes (Brittleness at low service temperatures)	
	Initial binder state	Impact cohesion	
	Initial binder state	Tensile cohesion	
	Initial binder state	Resistance to flow and deformation	
EN 13074-1,2	Service life	Durability of consistency at intermediate temperature	Cutbacks
	Service life	Durability of consistency at elevated Service temperature	Cutbacks
	Service life	Hardnes (Brittleness at low service temperatures)	Cutbacks
	Service life	Durability of Impact Cohesion	Cutbacks
	Service life	Durability of Tensile Cohesion	Cutbacks
	Service life	Durability of resistance to flow and deformation	Cutbacks
	Service life	Durability of resistance to flow and deformation	Cutbacks
EN 13074-1,2+EN14769	Long term	Durability of consistency at intermediate temperature	Cutbacks
	Long term	Durability of consistency at elevated Service temperature	Cutbacks
	Long term	Hardnes (Brittleness at low service temperatures)	Cutbacks
	Long term	Durability of Impact Cohesion	Cutbacks
	Long term	Durability of Tensile Cohesion	Cutbacks
	Long term	Durability of resistance to flow and deformation	Cutbacks
	Long term	Durability of resistance to flow and deformation	Cutbacks
	Long term	Durability of resistance to flow and deformation	Cutbacks

**Obrázek 3 Vlastnosti pojiv vzhledem k jejich stavu (52. jednání v Londýně, TKO)**

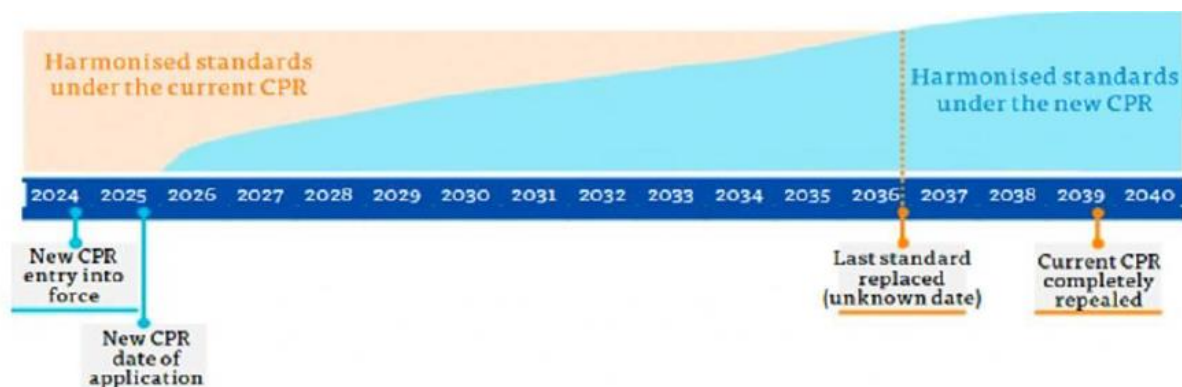
Funkční parametry pojiv jsou uvedeny na obrázku 4. Během jednání v Londýně bylo sděleno, že TG15 se zabývá pouze pojivou v rámci WG1 a nikoli WG2, jak minimálně český zástupce ve WG2 počítal. **Bylo sděleno, že WG2 by si měla tvořit vlastní specifikaci pojiv!** Toto rozhodnutí je dle mého názoru nerozumné a WG2 a WG1 by měli spolupracovat na tvorbě společného dokumentu.

Performace related to	Binder state	Parameter	Temp. range	Boundary conditions
Bleeding/rutting	EN 16659 + EN 13074-1	Jnr	35-80 °C	3,2 kPa
	what about flux binders (after EN 13075-1,2?)	R		3,2 kPa
Thermal cracking	EN 14771 after EN 13074-1,2 + EN 14769	TcS		S=300 Mpa
		Tcm		m=0,3
		ΔTC		
Fatigue resistance	EN 14770 after EN 13074-1,2 + EN 14769	VETT - Cross temp.	0-30 °C	δ = 45 ° at 1,59 Hz
Ravelling resistance	EN 14770 after EN 13074-1,2 + EN 14769	Cohesion – J/cm <sup>2</sup>	5-25 °C	
		Cohesion - elongation	5-25 °C	

Obrázek 4 Funkční charakteristiky pojiv (TG15), specifikace se stále vyvíjí.

**Jedním z cílů nového CPR měla být přehlednost a zjednodušení. Tento cíl rozhodně nebude naplněn.** Do dnešní doby není jasné, jak bude probíhat deklaráce povinných a nepovinných parametrů.

Nové CPR bylo odesláno ke schválení 20.9.2024. CPR bude schváleno v Evropském parlamentu dne 07.10.2024, v listopad 2024 dojde k publikaci v OJEU. Právní důsledky pro uživatele nastávají rok po publikaci v OJEU. Nové CPR bude mít postupný nástup účinnosti, platnost směrnice 305/2011 bude definitivně ukončena v r. 2039 viz obrázek 5 níže.



Obrázek 5 Harmonogram nástupu nového CPR a ručení směrnice 305/2011

**Návrh nové specifikace pro KAE nebyl dosud v NAT 2 projednán.**

V rámci WG2 v souvislosti s TG 14 byl vznesen dotaz týkající se porovnání vlastností pojiv po RTFOT a stabilizaci. Tato problematika nebyla stále vyřešena.

### Postup v normalizaci za rok 2024

#### Publikované normy, leden 2023 (doporučeno k překladu)

EN 16346 Okamžitá přilnavost a chování při štěpení.

#### Potvrzené normy (doporučení WG2)

EN 16345 Stanovení doby výtoku emulzí Redwoodovým viskozimetrem  
 CEN/TS 17481 Obsah soli v asfaltovém pojivu  
 CEN/TS 17482 Číslo kyselosti

#### Normy ve formálním hlasování (doporučeno k překladu)

EN 12594 Příprava zkušebních vzorků  
 EN 12597 Terminologie

## Normy v Enquiry (připravené pro hlesování nejpozději 01.04.2025)

EN 15626 Stanovení přilnavosti ředěných a fluxovaných asfaltových pojiv zkouškou ponořením do vody - Metoda s kamenivem

## Normy jako PWI v rámci WG2

EN 13075-1,2 Štěpitelnost (doporučeno k revizi vzhledem k vlastnostem filerů)

EN 1429 Zbytek na sítu (problematika skladování KAE)

EN 1428 Aezotropická destilace

Návrhy norem na systematickou revizi (probíhající do října 2024)

Reference	VERS	Systematic Review ballot closed waiting for Decision	Type	hEN	WI	WG	Dead Line
EN 13074-1	2019	Bitumen and bituminous binders – Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders – Part 1: Recovery by evaporation	Test		na	2	02/09/2024
EN 13074-2	2019	Bitumen and bituminous binders – Recovery of binder from bituminous emulsion or cut-back or fluxed bituminous binders – Part 2: Stabilisation after recovery by evaporation	Test		na	2	02/09/2024
EN 1429	2013	Bitumen and bituminous binders – Determination of residue on sieving of bituminous emulsions, and determination of storage stability by sieving	Test		na	2	08/10/2024
EN 13808	2013	Bitumen and bituminous binders – Framework for specifying cationic bituminous emulsions	Spec	X	na	2	08/10/2024
EN 15322	2013	Bitumen and bituminous binders – Framework for specifying cut-back and fluxed bituminous binders	Spec	X	na	2	08/10/2024

## Systematická revize pro normy v roce 2025

Reference	VERS	Standards & Documents with SR planned in 2025	Type	hEN	WI	WG	Dead Line
EN 1430	2009	Bitumen and bituminous binders – Determination of particle polarity of bituminous emulsions	Test		na	2	15/01/2025
EN 12848	2009	Bitumen and bituminous binders – Determination of mixing stability with cement of bituminous emulsions	Test		na	2	15/01/2025
EN 12849	2009	Bitumen and bituminous binders – Determination of penetration power of bituminous emulsions	Test		na	2	15/01/2025
EN 13301	2010	Bitumen and bituminous binders – Determination of staining tendency of bitumen	Test		na	TC	15/01/2025
EN 13304	2009	Bitumen and bituminous binders – Framework for specification of oxidised bitumens	Spec		na	TC	15/01/2025
EN 13305	2009	Bitumen and bituminous binders – Framework for specification of hard industrial bitumens	Spec		na	TC	15/01/2025
EN 13358	2019	Bitumen and bituminous binders – Determination of the distillation characteristics of cut-back and fluxed bituminous binders made with mineral fluxes	Test		na	2	15/10/2024

## **2. Informace týkající se národní úrovně**

V roce 2024 se konalo zasedání TNK 134 (Asfalty a asfaltová pojiva). Zde byly prezentovány informace z jednání TC336 i TC336/WG2 (za WG2 byla zaslána pouze zpráva).

V roce 2024 proběhlo 58. jednání Týmu 7 pro asfaltová pojiva a asfaltové emulze. Během jednání byly předneseny informace z jednání TC336/WG2 i TC336. Prezentované informace jsou uvedeny v zápisu z jarního zasedání TC336/WG2, které se konalo v dubnu 2024. Podzimní zasedání Týmu 7 (59.) se koná až po jednání gestorů. Hlavním bodem za WG2 bylo představení budoucí specifikace KAE – rozdělení na hEN a neharmonizovanou část.

V roce 2024 se laboratoř Vialab CZ přihlásila do francouzských srovnávacích zkoušek asfaltových emulzí (zkoušky se týkaly následujících postupů EN 1428, EN 16849, EN 1429 EN 12850, EN 12846-1, EN 13075-1, EN 13302, EN 13074-1,2 v kombinaci s EN 1427 a EN 1426). Zkoušená emulze byla C69B3. Výsledky nejsou dne 25.11.24 ještě k dispozici. Zkoušky jsou vedeny ve francouzském jazyce. Zajímavostí bylo, že zkoušená emulze nešla při laboratorní teplotě prolít přes síto 0,5 mm. Emulze měla velmi vysokou viskozitu.

V Kolíně, dne 25. listopadu 2024

Ing. Tomáš Koudelka  
Gestor za TC336/WG2





# Future specification for bituminous emulsions (TG within TC336/WG2)

Tomáš Koudelka | 07.08.2024, 52<sup>th</sup> meeting in London



# Proposal for future specification (Harmonized part)

# Proposal within TG (Harmonized part), essentials characteristics

Presented in Berlin, 51<sup>th</sup> meeting

	Harmonized Part	Current method	Mandate M/124	Answer to the Mandate M/124 (2000)	EN 13808 2013	Name of the method	Examples of countries which uses the method
Emulsion	Binder content	EN 1428			YES	water content in bituminous emulsions - Azeotropic distillation method	
		EN 1431			YES	residual binder and oil distillate from bitumen emulsions by distillation	
		EN 16849			NO	water content in bituminous emulsions - Method using a drying balance	
Residual binders	Breaking behaviour	EN 13075-1	Breaking behaviour	prEN 13075-1	YES	breaking value of cationic bituminous emulsions, mineral filler method	
		EN 13075-2	Breaking behaviour		YES	finer mixing time of cationic bituminous emulsions	
		EN 12848	Breaking behaviour	prEN 12848	YES	mixing stability with cement of bituminous emulsions	
Residual binders	Consistency at intermediate service temp.	EN 1426	Hardnes	EN 1426	YES	needle penetration	Probably everybody
	Consistency at elevated service temp.	EN 1427	Hardnes	EN 1427	YES	softening point - Ring and Ball method	Probably everybody
	Cohesion	EN 13588	Cohesion	prEN 13588	YES	cohesion of bituminous binders with pendulum test	UK, A, SK, CZ
	Force ductility	EN 13589		prEN 13589	YES	tensile properties of modified bitumen by the force ductility method	DE
	Resistance to flow and deformation	EN 13398	Resistance to flow/deformation		YES	elastic recovery of modified bitumen	DE, B, SK
	Hardnes (Brittleness at low service temp.)	EN 12593	Hardnes		YES	Fraass breaking point	CZ, SK

NOTE: This would mean that we need certain information related to binders' performance for both modified and unmodified bitumen. Therefore, it is anticipated (in this scenario) that hEN for binders must include at least the same characteristics as those harmonized characteristics related to the residual emulsion binders. + dynamic viscosity (emulsion production temperature) and flash point (safety).



# Proposal within TG (Harmonized part), essentials characteristics

Presented in Berlin, 51<sup>th</sup> meeting

	Harmonized Part	Current method	Mandate M/124	Answer to the Mandate M/124 (2000)	EN 13808 2013	Name of the method	Examples of countries which uses the method
Emulsion	Binder content	EN 1428			YES	water content in bituminous emulsions - Azeotropic distillation method	
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# Proposal within TG (Harmonized part), essentials characteristics

Presented in Berlin, 51<sup>th</sup> meeting

	Harmonized Part	Current	Mandate M/124	Answer to the Mandate	EN 13808	Name of the method	Examples of countries which uses the method				
Emulsion	Bi	Materials as such.									
	Br										
Residual binders	Consistency at intermediate service temp.	EN 1420	hardness	EN 1420	IES	needle penetration	Probably everybody				
	Co	Binders.						Probably everybody			
	Co										UK, A, SK, CZ
	Fc										DE
	Re										DE, B, SK
H.						CZ, SK					
NOTE: This v... or binders must include at least the same characteristics as those harmonized characteristics related to the residual emulsion binders + dynamic viscosity (emulsion production temperature) and flash point (safety)											

# Essentials characteristics – Materials as such

Binder content and breaking behaviour

Both influences **naming** and the binder content (can) have an **economical impact**. Link to Basic Work Requirements (BWR) is which exactly?

We need to have a clear answer from EC representatives – **is it possible to use them or not in a new hEN?** If YES, issues with methods still prevail.

# Essentials characteristics – Materials as such.

Binder content and breaking behaviour

Both influences **naming** and the binder content (can) have an **economical impact**. Link to Basic Work Requirements (BWR) is which exactly?

We need to have a clear answer from EC representatives – **is it possible to use them or not in a new hEN?** If YES, issues with methods still prevail.

‘essential characteristics’ means those characteristics of the product which relate to the basic requirements for construction works as set out in Annex I Part A Point 1 or which have been listed in Annex I Part A Point 2;



Page 36 of  
the new CPR

Brussels, 30.3.2022  
COM(2022) 144 final  
2022/0094 (COD)

# Essentials characteristics – Materials as such.

CPR Annex I, (basic requirements for construction works), Antti Koponen 07.09.2020



## Basic Requirements Construction Works

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Construction works as a whole and in their separate parts must be fit for their intended use, taking into account in particular the health and safety of persons involved throughout the life cycle of the works. Subject to normal maintenance, construction works must satisfy these basic requirements for construction works for an economically reasonable working life.

1. Mechanical resistance and stability
2. Safety in case of fire
3. Hygiene, health and the environment
4. Safety and accessibility in use
5. Protection against noise
6. Energy economy and heat retention
7. Sustainable use of natural resources

# Essentials characteristics – Materials as such.

CPR Annex I, (basic requirements for construction works), Antti Koponen 07.09.2020



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**Naming**

**Economical impact**

**????**

# Binder content – 3 documents vs 1 „essential“ characteristic

Essentials characteristics – Materials as such

## EN 13808

Residual binder and oil destilate content	EN 1431	✓
Water content	EN 1428	✓
	EN 16849	✓



# Binder content – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?

## EN 13808

Residual binder and oil destilate content	EN 1431	✓
Water content	EN 1428	✓
	EN 16849	✓

EN 1431 Determination of **residual binder** and oil distillate from bitumen emulsions by distillation

EN 1428 Determination of **water content** in bituminous emulsions - Azeotropic distillation method

EN 16849 Determination of **water content** in bituminous emulsions - Method using a drying balance

# Binder content – 3 documents vs 1 „essential“ characteristic

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Residual binder and oil destilate content	EN 1431	✓
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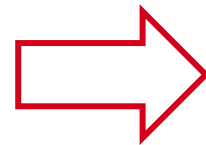
EN 1431 Determination of **residual binder** and oil distillate from bitumen emulsions by distillation

EN 1428 Determination of ~~water~~ **binder content** in bituminous emulsions - Azeotropic distillation method

EN 16849 Determination of **water** content in bituminous emulsions - Method using a drying balance

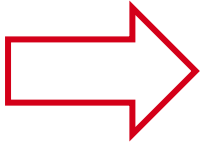
**Solution:**

**Rename the documents?**



# Binder content – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?



3 documents and 3 essential characteristics

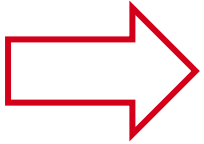
EN 1431: Determination of residual binder and oil destilate

EN 1428: Determination of binder content (since it is in revision now)

EN 16849: Determination of water content

# Binder content – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?



3 documents and 3 essential characteristics

EN 1431: Determination of residual binder and oil destilate

EN 1428: Determination of binder content (since it is in revision now)

EN 16849: Determination of water content (can cover most of the products)

EN 16849 = 150°C no fluxant

EN 16849 = 130°C fluxant vegetal < 5%

EN 16849 = 110°C fluxant vegetal > 5% or fluxant mineral < 1,5%

EN 1428 = mineral fluxant > 1,5 % (basically special emulsions)

# Breaking behaviour – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?

## EN 13808

Breaking value	EN 13075-1	✓
Fines mixing	EN 13075-2	✓
Mixing stability	EN 12848	✓

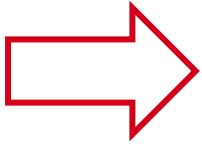
EN 13075-1 Determination of **breaking value** of cationic bituminous emulsions, mineral filler method

EN 13075-2 Determination of **fines mixing** time of cationic bituminous emulsions

EN 12848 Determination of **mixing stability** with cement of bituminous emulsions

# Breaking behaviour – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?



3 documents and 3 essential characteristics

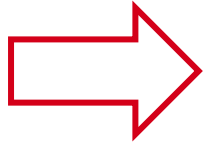
EN 13075-1: Emulsions' breaking value

EN 13075-2: Emulsions' fines mixing time

EN 12848: Emulsions' stability with cement

# Breaking behaviour – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?



3 documents and 3 essential characteristics

EN 13075-1: Emulsions' breaking value

EN 13075-2: Emulsions' fines mixing time

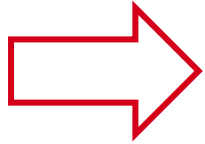
EN 12848: Emulsions' stability with cement

Required because of performance on site too? Or this can be said only about certain emulsions' types?



# Breaking behaviour – 3 documents vs 1 „essential“ characteristic

Names of individual documents can play a role?



3 documents and 3 essential characteristics

EN 13075-1: Emulsions' breaking value

EN 13075-2: Emulsions' fines mixing time

EN 12848: Emulsions' stability with cement

Required because of performance on site too? Or this can be said only about certain emulsion' types?

Devils' question: Do we at all need EN 13075-2 (is it useful at all?)

# Breaking behaviour categories based on emulsions' types

Breaking behaviour categories based on emulsions' types/application

## Spreading types (EN 13075-1)

B2-B5	Spreading emulsions CAS type	Tack coat	No exposure to traffic
B2-B5	Spreading emulsions ESU type	Surface dressing, fogseal, patch technology	Exposure to traffic and to weather conditions
B4-B5	Impregnating emulsions IMP type	prime coat	No exposure to traffic, applied on unbound materials

Note: Does not have to necessarily cover all types of emulsions/breaking categories

# Breaking behaviour categories based on emulsions' types

Breaking behaviour categories based on emulsions' types/application

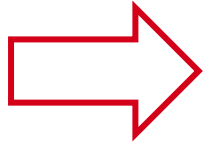
## MIX types (EN 12848, category B0 or EN 13075-1)

B0	MBCF	Microsurfacing	Exposure to traffic and to weather conditions
B4-B5	BBE	Asphalt concrete with bituminous emulsions	Exposure to traffic and to weather conditions
B4-B5	GE	Grave emulsions (asphalt mixtures, overlaid)	No exposure to traffic, mixture is to be overlaid
B2-B3	ENS	Repair mixtures (storeble mixtures)	Exposure to traffic and to weather conditions
B9-B10	REC	Recycling mixtures	Can have a softening effect/rejuvenating effect

Note: Does not have to necessarily cover all types of emulsions/breaking categories

# Binder content – 3 documents vs 1 essential characteristic

Breaking behaviour categories based on emulsions' types/application



3 documents and 3 essential characteristics

EN 13075-1: Emulsions' breaking value

~~EN 13075-2: Emulsions' fines mixing time~~

EN 12848: Emulsions' stability with cement

Can we live without EN 13075-2?

# Proposal for future specification (Harmonized part - Binders)

# Proposal within TG (Harmonized part), binders

Presented in Berlin, 51<sup>th</sup> meeting

The issue is that the binder states were not included

Examples of countries which uses the method

	EN 12949	Breaking behaviour	prEN 12949	MCS	Mixing stability with cement of bituminous emulsions		
Emulsion							
Residual binders	Consistency at intermediate service temp.	EN 1426	Hardnes	EN 1426	YES	needle penetration	Probably everybody
	Consistency at elevated service temp.	EN 1427	Hardnes	EN 1427	YES	softening point - Ring and Ball method	Probably everybody
	Cohesion	EN 13588	Cohesion	prEN 13588	YES	cohesion of bituminous binders with pendulum test	UK, A, SK, CZ
	Force ductility	EN 13589		prEN 13589	YES	tensile properties of modified bitumen by the force ductility method	DE
	Resistance to flow and deformation	EN 13398	Resistance to flow/deformation		YES	elastic recovery of modified bitumen	DE, B, SK
	Hardnes (Brittleness at low service temp.)	EN 12593	Hardnes		YES	Fraass breaking point	CZ, SK

NOTE: This would mean that we need certain information related to binders performance for both modified and unmodified bitumen. Therefore, it is anticipated (in this scenario) that TEn for binders must include at least the same characteristics as those harmonized characteristics related to the residual emulsion binders. + dynamic viscosity (emulsion production temperature) and flash point (safety).

# Proposal within TG (Harmonized part), binders

Methods to treat binders from emulsions (emulsion's residue)

It is important to have one method for one essential characteristic.

Since we have 3 methods of how to treat binders:

**EN 13074-1**

**EN 13074-1,2**

**EN 14769**

and we use the same testing methods at every stage, we have to define essential characteristics accordingly.



# Proposal of how to define each binder state (Harmonized part)

Methods to treat binders from emulsions (emulsion's residue)

EN 13074-1	<b>Initial binder state</b> consistency at intermediate temperatures
EN 13074-1,2	<b>Service life durability</b> of consistency at intermediate temperatures
EN 14769	<b>Long term durability</b> of consistency at intermediate temperatures

# Proposal of how to define each binder state (Harmonized part)

Methods to treat binders from emulsions (emulsion's residue)

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EN 13074-1,2	<b>Service life durability</b> of consistency at intermediate temperatures
EN 14769	<b>Long term durability</b> of consistency at intermediate temperatures

By doing so, we should still be able to use penetration (in this case) no matter what binder state is because we have 3 different essential characteristics.

# Proposal of how to define each binder state (Harmonized part)

Methods to treat binders from emulsions (emulsion's residue), version 04.10.2024

	Essential characteristics	Procedure	Note - cutbacks
EN 13074-1	Initial binder state	Consistency at intermediate service temperatures	Cutbacks, FV (Fm – destillation)
	Initial binder state	Consistency at elevated service temperatures	
	Initial binder state	Hardnes (Brittleness at low service temperatures)	
	Initial binder state	Impact cohesion	
	Initial binder state	Tensile cohesion	
	Initial binder state	Resistance to flow and deformation	
EN 13074-1,2	Service life	Durability of consistenci at intermediate temperature	Cutbacks
	Service life	Durability of consistenci at elevated Service temperature	Cutbacks
	Service life	Hardnes (Brittleness at low service temperatures)	Cutbacks
			Cutbacks
	Service life	Durability of Impact Cohesion	Cutbacks
	Service life	Durability of Tensile Cohesion	Cutbacks
	Service life	Durability of resistance to flow and deformation	Cutbacks
EN 13074-1,2+EN14769	Long term	Durability of consistenci at intermediate temperature	Cutbacks
	Long term	Durability of consistenci at elevated Service temperature	Cutbacks
	Long term	Hardnes (Brittleness at low service temperatures)	Cutbacks
			Cutbacks
	Long term	Durability of Impact Cohesion	Cutbacks
	Long term	Durability of Tensile Cohesion	Cutbacks
	Long term	Durability of resistance to flow and deformation	Cutbacks
			Cutbacks

# Proposal for future specification (NON-Harmonized part)

# Proposal within TG (nonHarmonized part)

Version 20.12.23, Presented in Berlin

	NonHarmonized		Mandate M/124	Asnwer to the Mandate M/124 (2000)	EN 13808 2013		Note
Emulsion	Sieve residue, 0,5 mm	EN 1429			YES	residue on sieving of bituminous emulsions, and determination of storage stability by sieving	Since 2023 (December)
	Sieve residue, 0,16 mm	EN 1429			YES	residue on sieving of bituminous emulsions, and determination of storage stability by sieving	
	Storage stability	EN 1429			YES	residue on sieving of bituminous emulsions, and determination of storage stability by sieving	
	Settling tendency	EN 12847			YES	settling tendency of bituminous emulsions	
	Water effect on binder adhesion	EN 13614	Water effect on binder adhesion	no supporting standard	YES	adhesivity of bituminous emulsions by water immersion test	
	Penetration behaviour	EN 12849			YES	penetration power of bituminous emulsions	
	Immediate adh. and breaking beh.	EN 16346			NO	breaking behaviour and immediate adhesivity of cationic bituminous emulsions	
	Efflux time	EN 12846-1	Viscosity	prEN 12846	YES	efflux time by the efflux viscometer - Part 1: Bituminous emulsions	
	Dynamic viscosity	EN 13302	Viscosity	WI xxx	YES	dynamic viscosity of bituminous binder using a rotating spindle apparatus	
Residual binders based on TG14	Resistance to flow and deformation	EN 16659	Resistance to flow/deformation		NO	Multiple Stress Creep and Recovery Test (MSCRT)	on EN 13074-1
	Durability	EN 14771	Hardnes		NO	flexural creep stiffness - Bending Beam Rheometer (BBR)	on EN 13074-1,2 + EN 14769
	Durability	EN 14770	Hardnes		NO	complex shear modulus and phase angle - Dynamic Shear Rheometer (DSR); VET, DSR - defined stiffness levels	on EN 13074-1,2 + EN 14769 (various possibilities)
	...						

NOTE: Supposing we have MSCR on residual binders we should have MSCR on base binders (TG14 proposed logically RTFOT as it is for mixtures). The same goes for other possible parameters.

Combining both hEN and EN tables we have included all the emulsions' (as such) characteristics as in the initial SR2020

# Proposal within TG (nonHarmonized part)

Version 20.12.23, Presented in Berlin

				Answer to the Mandate M/174	EN 13808		
Emulsion	Materials as such.						
	Immediate adh. and breaking beh.	EN 16346			NO	breaking behaviour and immediate adhesivity of cationic bituminous emulsions	Since 2023 (December)
	Efflux time	EN 12846-1	Viscosity	prEN 12846	YES	efflux time by the efflux viscometer - Part 1: Bituminous emulsions	
	Dynamic viscosity	EN 12202	Viscosity	prEN 12202	YES	Dynamic viscosity of bituminous binder using a rotating spindle apparatus	
Residual binders based on TG14	Binders.		Resistance to				EN 13074-2
							EN 13074-2 + EN 14769
							EN 13074-2 + EN 14769 (various possibilities)
							parameters.

Combining both hEN and EN tables we have included all the emulsions' (as such) characteristics as in the initial SR2020

# Binders (nonHarmonized part), what can be expected?

Version 07.08.24, Presented in London

Performace related to	Binder state	Parameter	Temp. range	Boundary conditions
<b>Bleeding/rutting</b>	<b>EN 16659</b> + EN 13074-1 what about flux binders (after EN 13075-1,2?)	<b>Jnr</b>	35-80 °C	3,2 kPa
		<b>R</b>		3,2 kPa
<b>Thermal cracking</b>	<b>EN 14771</b> after EN 13074-1,2 + EN 14769	<b>TcS</b>		S=300 Mpa
		<b>Tcm</b>		m=0,3
		<b>ΔTC</b>		
<b>Fatigue resistance</b>	<b>EN 14770</b> after EN 13074-1,2 + EN 14769	<b>VETT - Cross temp.</b>	0-30 °C	δ = 45 ° at 1,59 Hz
<b>Ravelling resistance</b>	<b>EN 14770</b> after EN 13074-1,2 + EN 14769	<b>Cohesion – J/cm<sup>2</sup></b>	5-25 °C	
		<b>Cohesion - elongation</b>	5-25 °C	

This is based on TG14 and TG15 work



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		<b>ΔTC</b>		
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		<b>Cohesion - elongation</b>	5-25 °C	

This is based on TG14 and TG15 work

But what about other parameters which are being discussed on national levels ?

- Critical temperatures (T0-T4)
- BTSV
- G\*....

# TG 14

Version 25.10.2023 (Annex 02 to WG2 50<sup>th</sup> meeting in Helsinki)




Performance related to:	Temperature range	Ageing state	Parameter	Assessment method
Permanent deformation at elevated temperature	40-80°C	STA	$J_{nr}$ / %recovery 3.2kPa	EN 16659
Thermal cracking at low temperature	<0°C	LTA	T S=300MPa m= 0.3 $\Delta T_c$	EN 14771
Fatigue-induced cracking	NA	LTA	VETT	EN 14770
Ravelling resistance	15 / 25°C	LTA	Total cohesion Elongation to break	EN 13589
Durability	NA	STA / LTA	$T_1 G^* = 5\text{MPa} / \delta$ at $T_1$	EN14770
			$T_2 G^* = 50\text{kPa} / \delta$ at $T_2$	EN14770
			$T_3 G^* = 5\text{MPa} / \delta$ at $T_3$	EN14770
			$T_4 G^* = 50\text{kPa} / \delta$ at $T_4$	EN14770
Handling - mixing	NA	Unaged	$T_m \eta = 0.2\text{Pa.s}$	EN 13302
Handling - paving			$T_p \eta = 2\text{Pa.s}$	EN 13302
Handling - compaction			$T_c \eta = 2 - 20\text{Pa.s}$	EN 13302

# TG 14

Version 25.10.2023 (Annex 02 to WG2 50<sup>th</sup> meeting in Helsinki)

## Input from WG2 (10/10/2023)

We lack the data at the moment.

- Paving & compaction viscosity – STA binder
- Consideration of emulsions, cut-back & fluxed bitumen
- Recovered  unaged binder
- Stabilised  STA binder
- Aged  LTA binder

# Final comments

# Questions to solve as soon as possible

New CPR, proposal Brussels, 30.3.2022 COM(2022) 144 final

Essential „*emulsions as such*“ characteristics: can we expect their inclusion in hEN because of naming issues and economical impact?

Are we going to rename EN 1428 in order to have a different essential characteristic?

Do we need EN 13075-2 as a method to specify emulsions' category? In case of yes, for for products specifically?

What do we expect from a non-harmonized specification, i.e. binder spec. related to kind of essential characteristic or do we include „all“ what we have?

Thank you for your attention

