Message

From: Cossalter, Laure [/O=SGMAIL/OU=ZA-ADMINISTRATIVEGROUP/CN=RECIPIENTS/CN=L4373888]
Sent: 24/02/2014 10:27:10
To: Mahoney, Joe [jmahoney@celotex.co.uk]; Fabra-Puchol, Maria [maria.fabra-puchol@saint-gobain.com]; Alengrin, Simon [salengrin@celotex.co.uk]
Subject: RE: Memo meeting 27/01/2013

Great then if you have commercial products and Kingspan in stock. Could you ship one of each bag (SW3000, FR5000, Kingspan wall insulation) to me at the address below. (transport and material cost can be covered by the project : H011 or invoiced).
You can leave the mineral glass facer on the gas open product.

Thank you Joe for the information. I agree with Simon to discuss it over the phone for the selection of lab samples + rest of competitors products.
My outlook calendar is updated, I let you choose a date.

Thank you in advance,

Best regards,

Adress :
Attn : Laure Cossalter
ISOVER SAINT GOBAIN CRIR
19 rue Emile Zola
Rantigny 60291
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Laure Cossalter
Insulation R&D engineer

Tel : [redacted]
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De : Mahoney, Joe
Envoyé : lundi 24 février 2014 11:02
À : Fabra-Puchol, Maria; Cossalter, Laure; Alengrin, Simon
Objet : RE: Memo meeting 27/01/2013

Dear All,

In regard to the points below,

For the commercial products we can supply without issue from stock, is there a technical reason why we would remove the mineral glass facer from the gas open product?
For the competitor products Kingspan phenolic we have on site or can source it. We do not have any PUR for sale in our market that we are aware of.

From the lab point of view the commercial index if PIR in the UK is understood to be 250-300. We can make in the lab samples from about 150-400index, however we cannot make panels with this. From a

fire retardant loading pint of view we can run from 0-20pbwp without issue, and probably up to 40pbwp, but this needs to be checked.
I will check the time scale to make lab samples.

In production line product the index is stable to +/-5%.

Thanks,

Joe

Joe Mahoney
Development Manager
jmahoney@celotex.co.uk
Ext: [redacted]
Mob: [redacted]

From: Fabra-Puchol, Maria
Sent: 24 February 2014 09:06
To: Cossalter, Laure; Alengrin, Simon; Mahoney, Joe
Subject: RE: Memo meeting 27/01/2013
Importance: High

Dears,

As additional information, the labs we contacted are giving us 4-5 weeks delay to get the results after reception of the sample. We'll need to send our samples ASAP.
I suggest you to choose an send the first series of samples from Celotex: different densities, applications and % of FR to have a complete view and in parallel, start sourcing form competitors (second wave can be sent afterwards).
Budget is not an issue at this stage, no constraint on the number of samples so far.

Thanks for your support

Maria
[redacted]

De : Cossalter, Laure
Envoyé : vendredi 21 février 2014 15:51
À : Alengrin, Simon (Celotex)
Cc : Fabra-Puchol, Maria; Mahoney, Joe
Objet : RE: Memo meeting 27/01/2013

Hi Simon and Joe,

Thanks Simon for your feedback. The method selected is performing the measurement on a sample mass of 50g at the thickness of the sample.
I would suggest that we first start comparing material for a similar application (ITI wall and ITE wall) at a similar thermal performance (R=3 m^2.K/W) – regardless of density.
For PIR commercial/Celotex products, I was thinking of :

- SW3000 – lambda 27mw/m.K – thickness = 80mm without facing
- And/or FR5000 – lambda 21mw/m.K – thickness = 60mm with facing

Could you approve or disapprove this choice.
Could you also advise me in the choice of competitors products- for the same application and same Rvalue:

- PF : kingspan
- PUR : Efisol, swisspor or Knauf?

On another hand, we can study the influence of %FR in formulation – at a commercial PIR index.
Joe could you confirm the PIR index is stable in your commercial product range?
At a lab scale, in which range can you make %FR vary for a PIR product? Will it be possible to prepare some PIR panel samples at different %FR but constant density, PIR index and lambda value? If yes, in which timeline?

I am available to discuss on the phone if needed,

Thank you in advance for your answer,

Best regards

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De : Alengrin, Simon [mailto:salengrin@celotex.co.uk]
Envoyé : mardi 18 février 2014 16:56
À : Cossalter, Laure
Cc : Fabra-Puchol, Maria; Mahoney, Joe
Objet : RE: Memo meeting 27/01/2013

Hi Laure,

I'd say that Joe will be more able to answer your questions accurately but here is what I think.

To make sure that we compare apples to apples, we should have the same mass of product in the test. I don't know if the standard sets a specific mass or volume of material. PUR and PIR are always in the

28-32kg/m3 density therefore it is not really an issue. Phenolic however has a much higher density (40-50kg/m3).

For the formulation, Joe, correct me if I'm wrong, but it is very difficult to determine the index of the competitors' foams, let alone the content in FR. I'm not sure we will be able to access this information. However we can do this on our lab samples and for that I let Joe recommend a series of samples to test. We'll probably want to test a PUR with no FR, one with x% FR, a PIR with no FR and a PIR with x% FR. The PIR index should be around 2 to be in line with our products, unless this value is not standard in the industry? Joe can answer once again.

Facers should probably used unless the sample size is too low and makes the ratio facer/foam unrealistic compared to actual commercial products. Once again, I don't know how much material is tested at once in the standard.

For PF, we have no choice than using commercial products.

For SW, pay close attention to the density of the product and the binder level that are the only chemicals that will impact the smoke toxicity.

Hopefully, this answered part of your questions. I let Joe bring more precisions.

Bonne journée,

Simon

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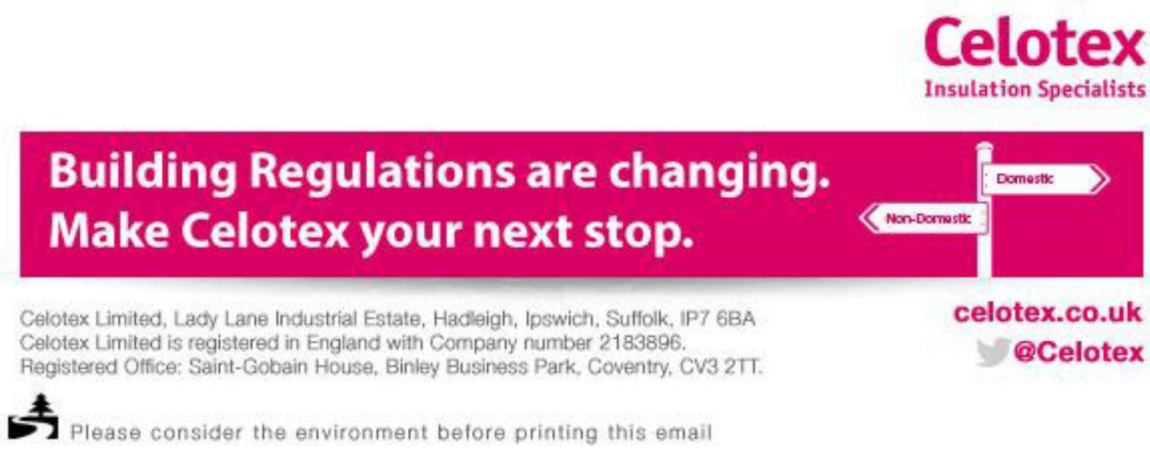

From: Cossalter, Laure [mailto:Laure.Cossalter@saint-gobain.com]
Sent: 18 February 2014 14:38
To: Alengrin, Simon (SG)

Cc: Fabra-Puchol, Maria
Subject: RE: Memo meeting 27/01/2013
Hello Simon,

In order to move on to the fire effluent toxicity measurement on the 1st serie of sample (**PF, PUR, PIR**, SW), could you help us select the most appropriate product you consider relevant to analyze in terms of :

- Formulation (PIR index and % FR)
- Density,
- Presence of facing (?)

But also relevant in terms of application and comparison to competitors for the PUR, PIR and PF products?

We could consider analyzing samples from Celotex lab (depending on the lab availabilities) and commercial ones (Celotex and/or competitors).

Thank you in advance,

Best regards,

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De : Alengrin, Simon [mailto:salengrin@celotex.co.uk]
Envoyé : vendredi 31 janvier 2014 10:59
À : Fabra-Puchol, Maria; Mahoney, Joe; Lesieur, Isabelle; Cossalter, Laure; Bordeaux, Frederic; Legendre, Nicolas
Objet : RE: Memo meeting 27/01/2013

Maria,

For PF, we will have to source Kingspan samples as they're, by far, the main supplier. This can be done from the UK or from Continental Europe.
For PIR and PUR, I am only proposing to use lab samples along with commercial ones. Up to Joe to confirm, depending on his team's workload but I suppose we may be able to provide lab samples.

Thanks,

Simon

Simon Alengrin
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From: Fabra-Puchol, Maria [mailto:Maria.Fabra-Puchol@saint-gobain.com]
Sent: 31 January 2014 09:35
To: Alengrin, Simon; Mahoney, Joe; Lesieur, Isabelle; Cossalter, Laure; Bordeaux, Frederic; Legendre, Nicolas
Subject: RE: Memo meeting 27/01/2013

Simon,

Ok with the new priorities if no comments from the other team members
Reading your comments, it will be more accurate if you chose the samples to analyze. Could you source us on PIR, PUR and PF?

Thanks

Maria
[redacted]

Please consider the environment before printing this e-mail

De : Alengrin, Simon [mailto:salengrin@celotex.co.uk]
Envoyé : vendredi 31 janvier 2014 10:30
À : Fabra-Puchol, Maria; Mahoney, Joe; Lesieur, Isabelle; Cossalter, Laure; Bordeaux, Frederic; Legendre, Nicolas
Objet : RE: Memo meeting 27/01/2013

Thanks Maria for the minutes.

For the samples to be tested, I would propose the following if we have to prioritise:
- P1: PIR, PUR, PF, SW: we definitely want to see the difference in behaviour between PIR and PUR, PF is the main challenger of PIR and SW would be the "baseline" for incombustible materials
- P2: EPS, GW, Wood
- P3: furniture

We will have to be careful on how we choose the PIR/PUR samples: the PIR index can greatly vary and formulations can include different levels of fire retardants. Rather than using commercial products from

the competition, we may want to make our own samples in Celotex lab to be 100% sure of the formulation.

Regards,

Simon

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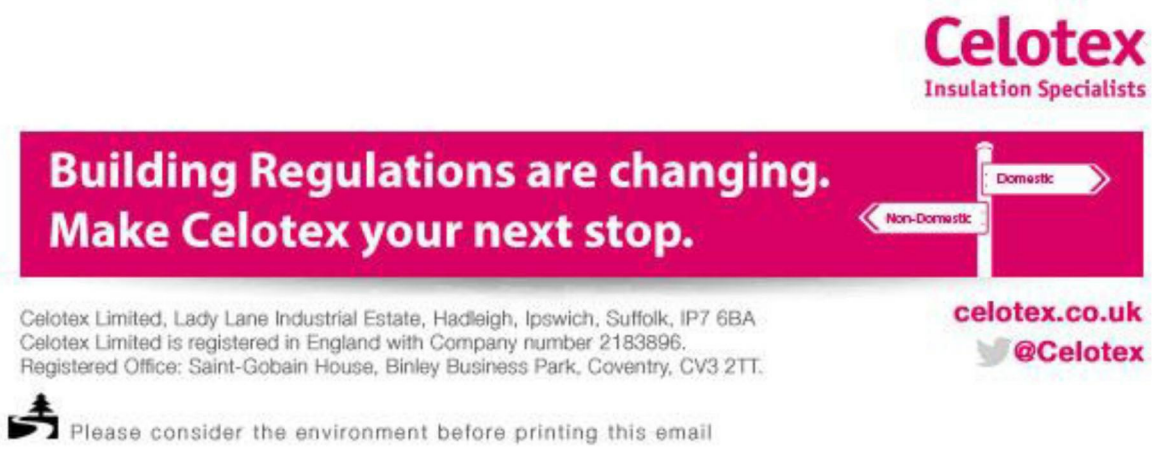

From: Fabra-Puchol, Maria [mailto:Maria.Fabra-Puchol@saint-gobain.com]
Sent: 29 January 2014 15:09
To: Mahoney, Joe; Alengrin, Simon; Lesieur, Isabelle; Cossalter, Laure; Bordeaux, Frederic; Legendre, Nicolas
Subject: Memo meeting 27/01/2013
Dears,

Find below the minutes of our discussion with the decisions taken and timeline for the next steps:

- Referential to use: Military Marine AFAP-3:2010 (OTAN): All the old referentials have been put aside. 2 different temperatures (350°C & 800°C) will be more representative when analyzing carbon based (decomposition ~500°C) and non-carbon based compounds separately.
- Substances to analyze: HCl, HCN, CO, CO2, HBr, SO2, HF, NOx, C2H3CHO (acroleine), HCHO (formaldehyde), C6H5OH (phenol). NH3 is not included on the list but, from the point of view of the chemists on the meeting, does not seem necessary
- Laboratories to use: The following ones have been identified as potential external laboratories (not possible to do toxicity measurements of thermal decomposed compounds in CRIR). Ideally, we should whose one before the **end of March** (will depend on cost and availability)
  - LNE : Waiting for quotation
  - SP (Suède) : To contact
  - EXOVA Warringtonfire (UK) : To contact
  - BRE (UK) : To contact

- Samples to analyze : 3 sets of samples can be tested depending on the budget/cost available and speed of tests.

Timeline to define once we get quotations (as soon as possible of course!)

- P1: PIR, PUR, GW, SW
- P2: PF, EPS, Wood
- P3: Furniture

- VOCs for EPS and PIR are under testing in CRIR. Additional samples will be sourced and sent => **Before end of March**
- Other points discussed:
  - Isabelle: Should we include Aymon de Reydellet in the working team group? Or at least keep him updated on the ongoing discussions?

Please let me know if I forget an important point.

Thanks

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