Innovative Solutions Canada Program

Challenge EN578-170003/37: Hybrid Ceramic Powder Processing System

Attachment 1
Questions and Answers #1 to #2

This document contains questions and answers related to this challenge.

Question #1:

What is the composition of demanded alumina powders and what its purity. Do we need to use only powder mentioned in the technical description as P172LSB Super Ground Reactive Alumina Very Low Soda and Silica Content or we can use any high purity powder possible to buy (99,99 % w)?

Response #1:

P172LSB Super Ground Reactive Alumina will be used for the qualification of the stage 1 proof of concept and the final deliverable. This is the powder that NRC is currently using in the armour technology application. The reactor must work with other ceramic powders also, including other alumina powders and silicon carbide also. As the qualification will be done with P172LSB, there are good reasons to do all the developmental work with that product also.

Question #2:

What is first stage amount of Hybrid Ceramic Powder in kg satisfactory for the tender demands evaluation and measurement?

Response #2:

As a reference, NRC already produces 250 g of hybrid ceramic powder over 6 hours, but the distribution of carbon nanotubes is inhomogeneous (or stratified). In this challenge, a Phase 1 proof-of-concept must demonstrate homogeneous powder can be produced with uniform deposition of carbon nanotubes, with a meaningful amount of powder (about 250 g of powder produced over 6 hours). The critical factor required in the proof-of-concept is therefore the homogeneous deposition of carbon nanotubes on the powder, on more than just a few grains of powder, since this should lead to a reactor producing at least 1 kg/hour and more, at the end of phase 2.