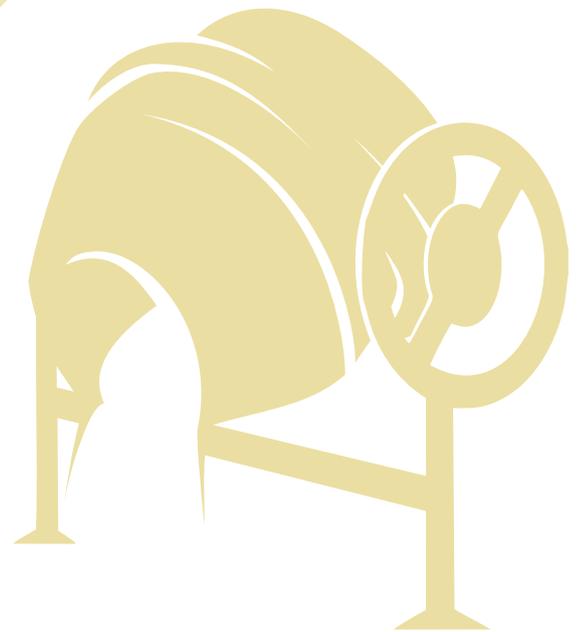




UNS
SEBELAS MARET
UNIVERSITY

INTERNATIONAL CONCRETE COMPETITION



 : @CIVILWEEKUNS  : @CIVILWEEKUNS
 : CIVILWEEK@FT.UNS.AC.ID  : @YQF3988W

CIVILWEEK.HMS-UNS.COM

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

EVENT

International Concrete Competition CIVILWEEK 2019

THEME

“Eco Self Compacting Concrete”

BACKGROUND

As time goes by, the need for facilities in infrastructure is increasing. In the world, infrastructure development has been intensively carried out. Construction development requires renewal and innovations to solve current problems. Self-Compacting Concrete (SCC), a high-quality concrete that can compact itself, is an example of technological innovation to solve concrete casting problems in reinforcement areas. In fact, the application depends on the availability of local materials. Depends on geography in the world, it is expected to find materials that can be used and/or developed as innovations for better SCC.

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)

»»—————««
CIVILWEEK 2019

International Concrete Competition CIVILWEEK 2019 is a competition to create innovated concrete in methods and materials. Based on the described problem, this year, we present the theme " *Eco Self Compacting Concrete* " with some characteristics, those are eco -friendly, high early compressive strength, low cost, and commercially good. International Concrete Competition CIVILWEEK 2019 is expected to produce innovations supporting the progress of infrastructure development.

TERMS OF THE PARTICIPANTS

1. Participants are undergraduate or diploma students (S1, D3 or D4) from all universities around the world.
2. Each team consists of 3 (three) students and 1 (one) supervisor from the same university. Members of the team are allowed to come from different departments and grades.
3. Each university is allowed to send more than one team.
4. Each participant is allowed to become leader or member *of 1 (one) team only.*
5. Each team is only allowed to submit 1 (one) proposal.
6. Participants are required to obey the schedule in this competition .

TERMS OF THE COMPETITION

I. Registration procedures.

1. Participants have to confirm via SMS or WhatsApp with the following format:
ICC 2019_ Name of Your University_ Name of Your Team
Send to:
+6285384664434 (Bagas)
+628997791448 (Moses)
2. Participants pay registration fee Rp 350.000,00 per team for Local participants and 40 USD per team for International participants. Payment can be made directly to the ICC committee at The Secretariat of Civil Engineering Student Association Sebelas Maret University or transfer to the BNI bank account:
Bank account number : **558738544**
Bank account name : **Tyas Annisaa**
3. For registration, participants have to send:
 - a) Photo copy / scan proof of payment transfer (for via Bank transfer)
 - b) Registration form, can be downloaded from www.civilweek.hms-uns.com
 - c) Photocopy or scan of student identity card
 - d) Photo 4x6, 3 pieces (each participant 1 photo)
 - e) Recommendation letter from the faculty
4. The requirements above submitted directly to the committee at Civil Engineering Student Association, or also can be sent by mail or email to the Secretariat of Civil Engineering Student Association, Sebelas Maret University no later than September 10th, 2019.

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

With the following address:

Sekretariat CIVILWEEK UNS Surakarta 2019:

Program Studi Teknik Sipil

Gedung 5 Lantai 1 Fakultas Teknik

Universitas Sebelas Maret (UNS) Surakarta

Jl. Ir. Sutami 36 A Ketingan Surakarta 57126 Indonesia

Email: civilweek@ft.uns.ac.id (cc ICC)

II. Systematics of the Competition

International Concrete Competition CIVILWEEK 2019 will be divided into 2 stage :

a. Elimination Stage

In this stage, the committee will choose 6(six) teams with highest scores based on **proposals and video** that have been sent. The selected teams continue to the final stage in Sebelas Maret University.

The rules of elimination stage :

1. Participants submit the proposal and video
2. Materials and admixture
 - a. Participants **are not allowed** to use *silicafume, fly ash, slag and steel powder*.

TERM OF REFERENCE

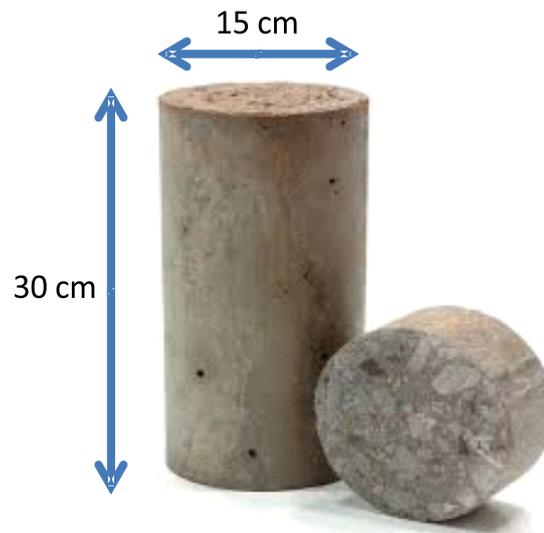
INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

- b. The maximum amount of cement is 450 kg/m^3
- c. Participants **must** explain **the background of the selected additional materials**, *availability, process to get materials, advantages and effect to the strength of the concrete also the impact on economic, social, and environment aspect.*
- d. Participants **must** give information about other materials that are used, the substitutional or additional materials from gravel, sand, or cement.
- e. Participants will get free *Superplasticizer (MasterGlenium SKY 8851)* from committee after registration and paying the registration fee.
- f. The cement that will be used is Portland Pozzolan Cement PPC(*).
- g. The other materials that are used **must** be explained (*stated in weight, volume, and the whole percentage of materials*).
- h. In the process of mixing, participants are allowed to use a mixer.
(): For the international participants, if there are no suitable types of cement and additives, those can be replaced with others after get permission from committee.*

3. SCC Criteria



- a. Participants **must do a test** for three sample of concrete (cylinder shape) with 15 cm as diameter and 30 cm as height.
- b. The procedure of making and testing concrete refers to the standard EN 12350-1 / EN 12350-2.

4. Video Criteria

Participants **must** make a video with the following terms:

- All content in the video **must** be in english.
- The duration of the video **maximum** 10 minutes. contains :
 - Introduction from members of the team (max 2 minutes)
 - Materials and method of mixing.

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

- The steps of mixing until testing the concrete, includes *Slump Flow and compressive strength test*.
- Attach HMS UNS's logo (on the top-right corner), each participants university's logo (on the top-left corner).
- Logo of HMS UNS can be downloaded from the website www.civilweek.hms-uns.com
- Date time during recording
 - The quality of video minimum 480 pixel.
 - The Video is sent to civilweek@ft.uns.ac.id (cc ICC) and will be uploaded by the committee to the **CIVILWEEK Youtube Channel**.
 - The committee will give marker for the 1-day-old concrete, the marker will be announced **one day before** the video recording.

III. Test Standards and Assessment Criteria

Standard test in this competition refers to the EN 12350-1 / EN 12350-2.

Sr. No.	Description ↓ Country →	EFNARC
1	Slump Flow (mm)	550-850

- * Participants **must** give an information whether the *Slump Flow* and compressive strength test result of 1-day-old concrete match the standard or not.

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

Assessment Criteria

a. Assessment in elimination stage includes :

No.	Assessed Category	Assessment Weight
1.	Proposal, including: - Systematic of the Proposal - Environmental and Economic Aspects - <i>Slump Flow Test</i> - The 1-day-old Compressive Strength Test (the highest value will be used as a divider parameter)	10% 30% 20% 30%
2.	Video	10%
TOTAL		100%

b. The favorite team based on video with the most number of likes, which will be announced on *Closing and Awarding Moment*.

PROPOSAL REQUIREMENT

1. Proposal contains maximum of **15 pages** (excluding *cover*, validation sheet, summary, list of figures, table of contents, list of tables and attachments).
2. All content must be in English.
3. Cover is designed with the logo of each university, proposal title, team members, year, and name of event (International Concrete Competitor CIVILWEEK 2019)

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

4. Proposal are written on A4 size paper, terms :

- a. Title, fonts size: 14, Font style: *Times New Roman*.
- b. The content of the proposal, font size: 12 and *line spacing* 1.5.
- c. Margin :
 - Left : 4 cm.
 - Top, bottom, right : 3 cm

5. Systematics for the preparation of proposal are :

- a. Cover
- b. Validation Sheet
- c. Preface
- d. Abstract
- e. Table of Contents
- f. List of Figures
- g. List of Tables (If any)
- h. Chapter 1 Preliminary
 - Background, includes :
 - Addition materials that are used in the proposal
 - The process to get addition materials.
 - Advantages and disadvantages of using these materials for the strength of concrete.
 - The impact on economic, social and environmental aspect
 - Basic theories that support the explanation.

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

i. Chapter 2 Method

- Data of the materials
- *Mix Design Calculation*
- Concrete Mixing Method

j. Chapter 3 The Study Case

- *Slump Flow Test of fresh concrete*
- 1-day-old Concrete's Compressive Strength Test Result (3 specimens)
- Analysis of impacts caused in terms of environmental and economic aspects.
Analysis stated in quantitative between innovation of SCC and normal SCC .

k. Chapter 4 Closing

- Conclusion
- Suggestion

l. Bibliography

m. Attachment

- Documentation : Materials and process of mixing.
- The others data related to the proposal.

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

TIMELINE

No.	Acitivites	Date
1.	Registration and requirements file submission.	29 th May – 10 th September 2019
2.	Mixing and video recording in each university.	12 th September 2019
3.	The 1-day-old concrete test in each university.	13 th September 2019
4.	Proposal and video submission	13 th September 2019
5.	Proposal evaluation and selection	13 th September – 3 rd October 2019
6.	Finalists announcement	4 th October 2019
7.	Technical Meeting in Sebelas Maret University	4 th November 2019
8.	Mixing in Sebelas Maret University	5 th November 2019
9.	Presentation and compressive strength test	6 th November 2019
10.	National Seminar	7 th November 2019
11.	Field Trip for finalists, <i>Closing</i> and <i>Awarding Moment</i>	8 th November 2019

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

FACILITIES FOR FINALIST

The following facilities during the final stage:

- a. The main materials of concrete (cement, water, gravel, sand, and superplasticizer)
- b. Meals during the competition.
- c. Accomodation during CIVILWEEK 2019 for 3 days.
- d. CIVILWEEK 2019 National Seminar Ticket
- e. Field Trip

WINNER PRIZE

International Concrete Competition prize:

- 1st place : 1000 USD + certificate + trophy
- 2nd place : 500 USD + certificate + trophy
- 3rd place : 300 USD + certificate + trophy
- Favorite winner : 40 USD + certificate

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

OTHER CONDITIONALS

1. The committee can change the rules if relevant .
2. The judge's decisions are absolute and undisputed .
3. The committee is not responsible for any failure of objects that caused by participants whether intentional or not.
4. All the submitted files will belong to the committee.
5. The latest terms, conditions, and other information about the competition are accessible on www.civilweek.hms-uns.com.
6. If there are any questions, please contact us via email civilweek@ft.uns.ac.id (cc ICC) or the attached number (on page 4).

ORGANIZED BY:

HIMPUNAN MAHASISWA SIPIL
PROGRAM STUDI TEKNIK SIPIL FAKULTAS TEKNIK
UNIVERSITAS SEBELAS MARET
SURAKARTA
Sekretariat Gedung V Lantai. 1 Fakultas Teknik
Jl. Ir. Sutami no. 36 A Ketingan Surakarta 57126 Indonesia

TERM OF REFERENCE

INTERNATIONAL CONCRETE COMPETITION (ICC)



CIVILWEEK 2019

ATTACHMENT

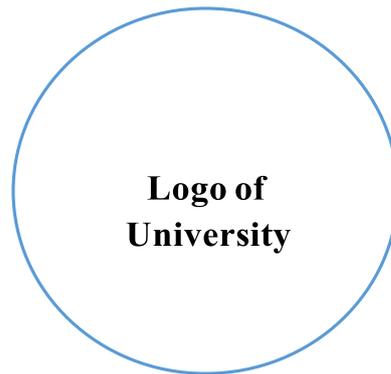
TITLE PAGE

INTERNATIONAL CONCRETE COMPETITION

CIVILWEEK UNS2019

“Eco Self Compacting Concrete”

“Title of Proposal”



**Logo of
University**

Arranged By :

Team Name

Name of Participant1 Student ID Number

Name of Participant2 Student ID Number

Name of Participant3 Student ID Number

Name of University

YEAR

MasterGlenium® SKY 8851

New generation high range water reducing admixture primarily developed for concrete industry where slump retention, high strength and durability are required in hot climate

DESCRIPTION

MasterGlenium SKY 8851 is a new generation high range water reducing admixture, based on chains of modified polycarboxylic ether, primarily developed for concrete industry where slump retention, high strength and durability are required in hot climate.

The ability to work with very low water/cement ratio and still obtain extended slump retention allows for the manufacture of high quality concrete as the risk of addition of mixing.

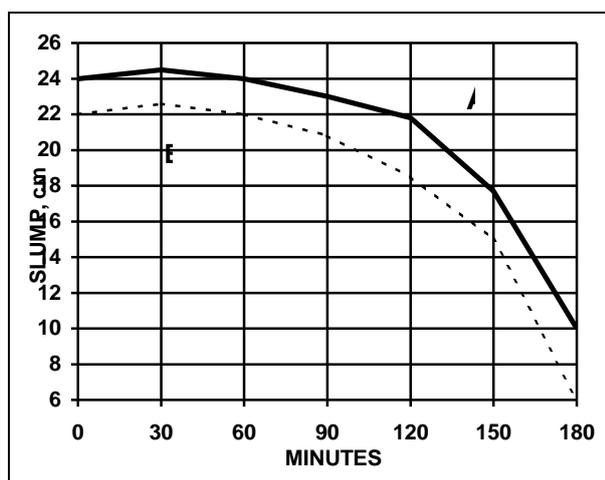


Figure 1 : Typical slump retention. Concrete manufactured with **MasterGlenium SKY 8851** according to:

- A. water/cement ratio = 0.38; 500 kg/m³ CEM
Dosage : 1.0 lt/100 kg; SCC
- B. water/cement ratio = 0.30; 500 kg/m³ CEM
Dosage : 1.0 lt/100 kg; SCC

MasterGlenium SKY 8851 is free of chloride, meets ASTM C 494 requirements for Type A and Type F and it is also compatible with all cements meeting the ASTM standards.

THE NEW CHEMISTRY of MasterGlenium SKY 8851

What differentiates from the traditional high range water reducing with good workability is a new, unique mechanism of action that greatly improves the effectiveness of cement dispersion. Traditional high range water reducing like melamine and naphthalene sulfonates are based on polymers which are absorbed by the cement granules. They wrap around the granules surface areas at the very early stage of the concrete mixing process. The sulphonic groups of the polymer chains increase the negative charge of the cement particle surface and disperse these particles by electrical repulsion. This electrostatic mechanism causes the cement paste to disperse and has the positive consequence of requiring less mixing water to obtain a given concrete workability. Hydration however starts as soon as the cement particles get in contact with mixing water. The rapid growth of hydration crystals will change the surface mechanical of the particles and thus of set the free dispersion of them. **MasterGlenium SKY 8851** has a different chemical structure from the traditional high range water reducing. It consists of a carboxylic ether polymer with long side chains. At the beginning of the mixing process it initiates the same electrostatic dispersion mechanism as the traditional high range water reducing, but the side chains linked to the polymer backbone generate a steric hindrance which greatly stabilises the cement particles ability to separate and disperse. With this process, flowable concrete with greatly reduced water content is obtained. The alkalinity created by the cement paste allows the polymers of **MasterGlenium SKY 8851** to "open up and progressively release" many additional polymers chains that will prevent the early flocculation or stiffening of the mix.

The mechanism allows to obtain, compared to traditional retarding high water reducing admixtures, considerably longer workability, reduction of mixing water content and higher early strengths.

MasterGlenium® SKY 8851

RECOMMENDED FOR

MasterGlenium SKY 8851 is especially suitable for concrete used in the construction which requires good workability and high early and final strengths, such as:

- Production of load bearing precast elements (e.g. bridge girders, piles, concrete housing)
- Self compacting concrete for precast concrete
- Low slump concrete
- Structures constructed using travelling forms and slip forms
- Hot weather concreting
- Insitu casting of structural elements

BENEFITS

- Rheoplastic concrete with the lowest water/cement ratio;
- no segregation or bleeding;
- low vibration time required even in case of high reinforced concrete;
- excellent surface appearance;
- compared to traditional superplasticizers, the addition of **MasterGlenium SKY 8851** reduces risks of retempering concrete on job site with additional water and improves the engineering properties of concrete like early and ultimate strengths, modulus of elasticity; bond strength to steel, depths of carbonation,

impermeability, resistance to chemical aggressive agents, shrinkage and creep.

QUANTITY TO USE

The normally recommended dosage rate is approximately 0.5 – 1.5 litre per 100 kg of cementitious material. Other dosages may be recommended in special cases according to specific job site conditions (consult our Technical Service Department for advice).

DIRECTION FOR USE

MasterGlenium SKY 8851 is a ready-to-use admixture to be added to the concrete mix as a separate component. Optimal mixing water reduction is obtained if **MasterGlenium SKY 8851** is poured into the concrete mix right after the addition of the mixing water. Avoid adding the admixture to the dry aggregates.

PACKAGING & STORAGE

MasterGlenium SKY 8851 is supplied in bulk delivery, IBC tank 1,000L and 205L sealed drums.

SHELF LIFE

MasterGlenium SKY 8851 can be stored for 6 month if stored at temperature above 0°C

AN/MasterGlenium SKY 8851//v1/190313

STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this BASF publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

NOTE

Field service where provided does not constitute supervisory responsibility. Suggestions made by BASF either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not BASF, are responsible for carrying out procedures appropriate to a specific application.

PT BASF Indonesia

DBS Bank Tower 27th Floor

Ciputra World 1 Jakarta

Jl. Prof. Dr. Satrio Kav. 3-5

Jakarta 12940

Phone: +6221 29886000

Website: www.master-builders-solutions.basf.co.id