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**ISSIQ IQLIM SHAROITIDA SOVUTISH TIZIMLI QOLIPLARNI**  
**MONOLIT KONSTRUKSIYALAR MONTAJIDA QO'LLASH**  
**TEXNOLOGIYASI**

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**Annotatsiya.** *Termoaktiv (sovutish) qolip-bu sovutish elementlari bilan jihozlangan va izolyatsiya qilingan ko'p qatlamli qoliplar. Qolip yuzasi orqali sovuqlik betonning sirt qatlamiga uzatiladi va keyin uning butun qalinligi bo'ylab tarqaladi. Betonni shu tarzda sovutish tushqi havo haroratiga bog'liq bo'lmagan holatda ishlashga imkon yaratadi. Sovutish qoliplari monolit konstruksiyalarni va o'ta yuqori massali inshootlarni, shuningdek mono'par binolarni qurishda, yuqori markali betonlarni ishlatishda vaqtning tejashiga yordam beradi.*

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*Tayanch soʻz iboralar. Termoaktiv, Orayopma, plita, monolit, Ustun kalonna, toʻsin rigel, osmonoʻpar binolar, konstruksiya, tashqi taʻsir, armatura, armaturalash.*

***Аннотация.** Термоактивные (охлаждающие) формы представляют собой многослойные формы, оснащенные охлаждающими элементами и изолированные. Через поверхность формы холод передается поверхностному слою бетона, а затем распространяется по всей его толщине. Охлаждение бетона таким способом дает возможность работать независимо от температуры наружного воздуха. Охлаждающие формы помогают сэкономить время при строительстве монолитных и особо массивных сооружений, небоскребов, использовании высококачественного бетона.*

***Ключевые слова.** Термоактив, Орайопма, плита, монолит, колонна-колонна, балочный ригель, небоскребы, строительство, внешнее воздействие, арматура, армирование.*

**Kirish (Introduction).** Sovutish qoliplarining dizayni xilma-xildir. Ularga qo'yiladigan asosiy talab qoliplarning yuzasi bo'ylab harorat taqsimotining bir xilligini taminashdan iborat.

Sovutish elementlari sifatida quvurli sovutgichlar (sovutishelementlari), sovutish quvirlari ichidan oquvchi frionlar, moslashuvchan mato lentalar, materiallarning tarkibi (uglerod lenta sovutgichlari) va Supero'tkazuvchilar elementlar va boshqalar ishlatiladi.

Quvurli elektr sovutgichlar diametri 9... 18 mm bo'lgan naychalardan (po'lat, mis) iborat bo'lib, ularning ichida spirali joylashgan. Spiral va naycha devorlari orasidagi bo'shliq kristalli magniy oksidi bilan to'ldirilgan. Sovutish elementlarining sovutish harorati -95...-10 °C, shuning uchun ular betonga yopishgan qolip yuzasi bilan aloqa qilmasliklari kerak. Izolyatsiya materialidan yasalgan ramkaga o'ralgan va asbest bilan izolyatsiya qilingan mm. Bunday sovutgichlar ishonchli, chunki ular yuklash va tushirish paytida deformatsiyaga moyil, shuning uchun ular ehtiyotkorlik bilan ishlashni talab qiladi.

Quvirlar misdan bo'lib ular sovuqlikka chidamli izolyatsiyada joylashtirilgan 0,7...0,8 mm diametrli doimiy quvirdan iborat. Izolyatsiya yuzasi mexanik shikastlanishdan metall dan himoya qatlam bilan himoyalangan.

Sovutgichlar sovutish rejimlari va quvvatiga qarab qolip qalqoniga joylashtiriladi: sovutish simlari va kabellari pastki qismga, sovutish elementlari — undan qisqa masofada o'rnatiladi.

Sovutish qolipida sovutish kabellari va simlari yupqa polimer plyonkalardan iborat himoya qoplamalariga himoyalangan.

Uglerod lenta sovutgichlari qalqonning pastki qismiga maxsus yopishtiruvchi moddalar bilan yopishtirilgan. Kommutatsiya simlari bilan kuchli aloqani ta'minlash uchun lentalarning uchlari mislanadi.

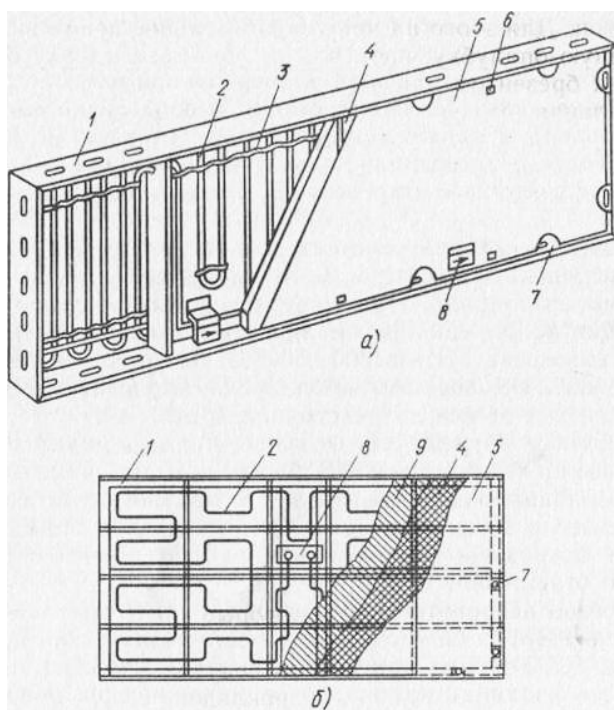
Sovutish elementlari qalqonlarning pastki qismiga maxsus ushlagichlar va bosim chiziqlari yordamida, sovutish simlari (kabellari) esa asbest plitalari yordamida o'rnatiladi. Izolyatsiya himoya qopqog'i bilan shikastlanishdan himoyalangan. Kaliplarning qalqonlarini bir-biriga ulash uchun, himoya qopqog'ida mahkamlash teshiklarining holatiga muvofiq chuqurchalar qoldiriladi.

Qalqonlarni ulash uchun 8 vilkali ulagichlardan foydalaning.

Qoliplarni o'rnatishdan oldin izolyatsiya va elektr simlarining yaxlitligini tekshirish orqali ishonch hosil qilinadi. Qolip betonlash blokiga alohida qalqonlar bilan qo'lda yoki kranlar yordamida kattalashtirilgan panellar bilan o'rnatiladi. O'rnatilgandan so'ng, qalqon va panellar elektr tarmog'iga ulanadi. Termoaktiv qoliplarni quvvatlantirish va betonni sovutish rejimini boshqarish moslamalari pastga tushadigan transformator, simlar tizimi, boshqaruv paneli va navbatchi elektrchi yoki operator uchun xonadan iborat. O'rnatish 100... 150 m<sup>2</sup> qoliplarni quvvat bilan ta'minlaydi.

1 — qolip ramkasi, 2— sovtgich, 3—bosim paneli, 4 — izolyatsiya (mineralpaxtali yoki penopolisterol qalinligi 40 mm, 5 — himoya qopqog'i (qalinligi 3...4 mm bo'lgan metal yoki suvga chidamli shit), 6-korpusni mahkamlash uchun tirgak, 7-ulanish moslamalarini o'rnatish uchun kesma, 8-elektor yoki quvurli ulagich ulagichi, 9-varaqli asbest plitasi

Qolip maxsus terminal qutilariga ulanadi, ular qolip yuzasidan kamida 0,5 m balandlikda joylashgan bo'lib, ramka elementlarini (ustunlar, belbog'lar, tirkamalar) sovutishda terminal qutilar sovutiladigan elementdan 50...70 sm masofada o'rnatiladi.



**1-Rasm: Quvurli sovutish elementlari (a) va sovutish kabellari (b) bo'lgan termoaktiv qolip:**

Betonlashdan oldin ilgari yotqizilgan beton sovutiladi. Buning uchun qisqa vaqt ichida termoaktiv qolip joylashtiriladi, avval betonlash blokini brezent yoki polietilen plyonka bilan qoplaydi.

O'rnatilgan beton aralashmaning maksimal harorati 25°C. uni an'anaviy usullar bilan yotqizib, elektr kabelga zarar bermaslik va izolyatsiyani namlantirmaslik uchun ehtiyot choralari ko'rinadi. Tashqi harorat 60 °C dan oshganda, qoliplar tarp yoki polimer plyonka bilan qoplanadi.

Sovutishning texnologik rejimiga rioya qilish sizga betonning kerakli fizik-mexanik xususiyatlarini olish imkonini beradi. Sovutishning boshqariladigan parametrlari betonning sovutish tezligi, qalqonlarning pastki qismidagi harorat va sovutish davomiyligi hisoblanadi.

Qoliplarni maxsus tokchalarda yoki vertikal holatda tashing va saqlash nazarda tutilgan. Qoliplarni montajida elektr ulagichlariga zarar bermaslik uchun yog'och qistirmalar o'rnatiladi.

Yozda Ustunlarni va poydevorlarni monolit betonni sovutish, prefabrik tuzilmalar orasidagi bo'g'inlar uchun termoaktiv moslashuvchan qoplamalar ishlatiladi 50 °C gacha isitishni ta'minlaydigan uglerodli lenta sovutgichlari va simlari bo'lgan yengil, moslashuvchan qurilma. qoplama vulkanizatsiyalanmagan kauchuk qatlamidan, mustahkamlovchi shisha tolali shishadan tashkil topgan qatlamni issiq presslash orqali amalga oshiriladi.

Qistirmalari uglerodli mato elektr sovutgichlari yoki izolyatsiyalangan quvirlardan ibrat. Suvutgichli qoliplar turli o'lchamlarda ishlab chiqarilishi mumkin, bu ularni termoaktiv qolip sovutgichlari sifatida ishlatishga imkon beradi.

Qoliplar konstruktiv yig'iladigan bino yoki inshootning perimetri bo'ylab va hatto murakkab konstruksiyalarni barpo etishda qoliplarni montaj qilish mumkin.

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