

Građevinski fakultet Sveučilište u Rijeci
Laboratorij za prometnice
Radmile Matejčić 3, 51000 Rijeka, Hrvatska

Faculty of Civil Engineering University of Rijeka
Transportation laboratory
Radmile Matejčić 3, 51000 Rijeka, Croatia

Izradili:

Voditeljica laboratorija: Marijana Cuculić, mag.ing.aedif.

Šef katedre: Dr.sc. Aleksandra Deluka Tibljaš

Prepared by:

Head of transportation laboratory: Marijana Cuculić, mag.ing.aedif.

Chief of Transportation Department: Dr.sc. Aleksandra Deluka Tibljaš

Kontakt/ Contact:

marijana.cuculic@gradri.uniri.hr; +385 51 265 929; +385 91 509 6285

aleksandra.deluka@gradri.uniri.hr; +385 51 265 925

uniri



Europska unija
Ulaganje u budućnost



KONKURENTNA
HRVATSKA



Ministarstvo
znanosti,
obrazovanja
i sporta

Projekt je sufinancirala Europska unija iz Europskog fonda za regionalni razvoj.
Sadržaj ove publikacije isključivo je odgovornost autora.

EN 12697-5, Bituminous mixtures — Test methods for hot mix asphalt — Part 5: Determination of the maximum density (except 9.3) HRN EN 12697-5, Bitumenske mješavine -- Ispitne metode za asfalt proizveden vrućim postupkom -- 5. dio: Određivanje gustoće asfaltne mješavine (EN 12697 5:2009+AC:2012); osim 9.3	
EN 12697-6, Bituminous mixtures — Test methods for hot mix asphalt — Part 6: Determination of bulk density of bituminous specimens HRN EN 12697-6, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 6. dio: Određivanje gustoće asfaltnih uzoraka (EN 12697-6:2012)	
EN 12697-8, Bituminous mixtures — Test methods for hot mix asphalt — Part 8: Determination of void characteristics of bituminous specimens. HRN EN 12697-8:2003 Bitumenske mješavine -- Ispitne metode za asfalt proizveden vrućim postupkom -- 8. dio: Određivanje šupljina u asfaltnim uzorcima (EN 12697-8:2003)	
EN 12697-12, Bituminous mixtures — Test methods for hot mix asphalt — Part 12: Determination of the water sensitivity of bituminous specimens. (Procedure A) HRN EN 12697-12, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 12. dio: Određivanje osjetljivosti asfaltnih uzoraka na vodu (EN 12697-12:2008); Postupak A	

EN 12697-13, Bituminous mixtures — Test methods for hot mix asphalt — Part 13: Temperature measurement. HRN EN 12697-13, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 13. dio: Mjerenje temperature (EN 12697-13:2000+AC 2001)	
EN 12697-14, Bituminous mixtures — Test methods for hot mix asphalt — Part 14: Water content. HRN EN 12697-14, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 14. dio: Udio vode (EN 12697-14:2000+AC:2001)	
EN 12697-22, Bituminous mixtures — Test methods for hot mix asphalt — Part 22: Wheel tracking; Small size device; Procedure A and B. HRN EN 12697-22, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 22. dio: Kolotražanje (EN 12697 22:2003+A1:2007); Mali uređaj; Postupak A i B.	

EN 12697-23, Bituminous mixtures — Test methods for hot mix asphalt — Part 23: Determination of the indirect tensile strength of bituminous specimens. HRN EN 12697-23, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 23. dio: Određivanje vlačne čvrstoće asfaltnih uzoraka neizravnom vlačnom metodom(EN 12697-23:2003)	
EN 12697-24, Bituminous mixtures — Test methods for hot mix asphalt — Part 24: Resistance to fatigue. Annex D Note: for bituminous mixtures with maximum aggregate size up to 22,4 mm. Annex E HRN EN 12697-24, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 24. dio: Otpornost na zamor (EN 12697 24:2012) Dodatak D Napomena: za bitumenske mješavine najveće veličine zrna do 22,4 mm Dodatak E	
EN 12697-26, Bituminous mixtures — Test methods for hot mix asphalt — Part 26: Stiffness. Annex B (for bituminous mixtures with maximum aggregate size up to 22,4 mm), Annex C HRN EN 12697-26, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 26. dio: Krutost (EN 12697-26:2012) Dodatak B (za bitumenske mješavine najveće veličine zrna do 22,4 mm), Dodatak C	
EN 12697-27, Bituminous mixtures — Test methods for hot mix asphalt — Part 27: Sampling. HRN EN 12697-27, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 27. dio: Uzorkovanje (EN 12697-27:2000)	

EN 12697-28, Bituminous mixtures — Test methods for hot mix asphalt — Part 28: Preparation of samples for determining binder content, water content and grading. HRN EN 12697-28, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 28. dio: Priprema uzoraka za određivanje udjela veziva, udjela vode i granulometrijskog sastava (EN 12697-28:2000)	
EN 12697-29, Bituminous mixtures — Test methods for hot mix asphalt — Part 29: Determination of the Dimensions of a bituminous specimen. HRN EN 12697-29, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 29. dio: Određivanje dimenzija asfaltnog uzorka (EN 12697-29:2002)	
EN 12697-30, Bituminous mixtures — Test methods for hot mix asphalt — Part 30: Specimen preparation by impact compactor (except 5.2) HRN EN 12697-30, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 30. dio: Priprema uzorka udarnim zbijačem (EN 12697-30:2012); Osim 5.2	

EN 12697-31, Bituminous mixtures — Test methods for hot mix asphalt — Part 31: Specimen preparation by gyratory compactor.

HRN EN 12697-31, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 31. dio: Priprema uzorka kružnim zbijanjem (EN 12697-31:2007)



EN 12697-33, Bituminous mixtures — Test methods for hot mix asphalt — Part 33: Specimen preparation by roller compactor; Clause 5.2

HRN EN 12697-33, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 33. dio: Priprema asfaltnog uzorka valjkastim zbijanjem (EN 12697-33:2003+A1:2007); Točka 5.2



EN 12697-34, Bituminous mixtures — Test methods for hot mix asphalt — Part 34: Marshall test.

HRN EN 12697-34, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 34. dio: Marshallovo ispitivanje (EN 12697-34:2012)



EN 12697-35, Bituminous mixtures — Test methods for hot mix asphalt — Part 35: Laboratory mixing.

HRN EN 12697-35, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 35. dio: Laboratorijsko miješanje (EN 12697-35:2004+A1:2007)



EN 12697-36, Bituminous mixtures — Test methods for hot mix asphalt — Part 36: Determination of the thickness of a bituminous pavement. HRN EN 12697-36, Bitumenske mješavine – Ispitne metode za asfalt proizveden vrućim postupkom – 36. dio: Određivanje debljine asfaltnih slojeva u kolniku (EN 12697-36:2003)	
OSNOVNO – Agregati Aggregates	
HRN EN 1097-7:2008 Ispitivanja mehaničkih i fizikalnih svojstava agregata -- 7. dio: Određivanje gustoće punila – Piknometrijska metoda (EN 1097-7:2008) EN 1097-7:2008, Tests for mechanical and physical properties of aggregates -- Part 7: Determination of the particle density of filler -- Pyknometer method (EN 1097-7:2008)	
HRN EN 1097 – 6, Ispitivanja mehaničkih i fizikalnih svojstava agregata – 6. dio: Određivanje gustoće i upijanja vode, Piknometrijska metoda EN 1097-6, Test for mechanical and physical properties of aggregates – Part 6: Determination of particle density and water absorption (EN 1097-6:2013) Pyknometer method	
HRN EN 933-1:2012, Ispitivanje geometrijskih svojstava agregata -- 1. dio: Određivanje granulometrijskog sastava -- Metoda sijanja (EN 933-1:2012) EN 933-1:2012 (CEN) , Tests for geometrical properties of aggregates -- Part 1: Determination of particle size distribution -- Sieving method (EN 933-1:2012)	

OSNOVNO – Bitumen	
Bitumen	
HRN EN 1426, Bitumen i bitumenska veziva - Određivanje penetracije iglom	
EN 1426, Bitumen and bituminous binders - Determination of needle penetration (EN 1426:2015)	
HRN EN 1427, Bitumen i bitumenska veziva - Određivanje točke razmekšanja - Metoda prstena i kuglice	
EN 1427, Bitumen and bituminous binders - Determination of softening point - Ring and Ball method (EN 1427:2015)	
HRN EN 15326, Bitumen i bitumenska veziva - Mjerenje gustoće i relativne gustoće - Metoda piknometra s kapilarnim čepom	
EN 15326, Bitumen and bituminous binders - Measurement of density and specific gravity - Capillary - stoppered pycnometer method (EN 15326:2007+A1:2009)	

Terenska mjerenja Field measurement	
Georadar: RIS Hi-Pave Survey: 1 data logger PC Panasonic CF 19 1 multi-channel control unit DAD MCH Fast-Wave 1 Horn antennas at 2 GHz (or 1 GHz) 1 dual frequency antenna 400 – 900 MHz 1 high-speed survey wheel for distance measurement Mechanical frame to install the system on the vehicle (by towing hook) Acquisition software Battery and battery charger Cables and accessories	
FWD – Primax 1500: Double-axle trailer 2,5 m geophone beam Recording equipment with 10 sensors and 1 load cell Special load cell and mass system (max load 150kN) 3 automatic temperature sensors (air, surface, asphalt) DMI integrated in software Data collection program Time – history on all 10geophones and load cell	
Hawkeye 2000: Digital laser profiler – 5 lasers Asset view digital imaging system – 1 camera GPS Garmin Real-time data acquisition software – Onlooker live Available outputs: • Longitudinal Road Profile, • Road Roughness, • Pavement Surface Texture (Macro-texture), • Pavement Transverse Profile, • Rut Depth, and • Faulting	