



# VZ-P

FIALA CHIMICA > CHEMICAL CAPSULE  
CAPSULE CHIMICHE > CHEMISCHE PATRONE



**VZ-P**

Fiala Chimica  
Chemical Capsule  
Capsule Chimiche  
Chemische Patrone



**V-A**



Barra filettata a testa guidata con dado e rondella classe 5.8  
Threaded stud with driven head with nut and washer class 5.8  
Tige filetée à tête guidée avec écrou et rondelle classe 5.8  
Gewinde Stange mit Kopf geführt mit Mutter und Scheibe Klasse 5.8



**V-A A4**



Barra filettata a testa guidata con dado e rondella inox A4  
Threaded stud with driven head with nut and washer inox A4  
Tige filetée à tête guidée avec écrou et rondelle inox A4  
Gewinde Stange mit Kopf geführt mit Mutter und Scheibe inox A4

## Omologazioni | Approvals | Homologations | Zulassung



FIRE RESISTANCE



## Applicazioni | Applications | Applications | Anwendungen



## Tempi di posa | Setting times | Temps d'installation | Verlegungszeit



| V                                                                                                                                                                                                        | 01     | 02     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|
|                                                                                                                                                                                                          | C      | Kg     |
|                                                                                                                                                                                                          | 30 °C  | 6 min  |
|                                                                                                                                                                                                          | 20 °C  | 6 min  |
|                                                                                                                                                                                                          | 10 °C  | 15 min |
|                                                                                                                                                                                                          | 5 °C   | 25 min |
|                                                                                                                                                                                                          | 0 °C   | 50 min |
|                                                                                                                                                                                                          | -5 °C  | 3 h    |
|                                                                                                                                                                                                          | -10 °C | 4 h    |
|                                                                                                                                                                                                          | -15 °C | 7 h    |
|                                                                                                                                                                                                          | -20 °C | 17 h   |
| <b>+5°C</b>                                                                                                                                                                                              |        |        |
| Temperatura minima del prodotto per l'applicazione<br>Minimum product temperature for application<br>Température minimal de la cartouche pour l'application<br>Min Kartouchetemperatur für die Anwendung |        |        |
| <b>ASCIUTTO   DRY   SEC   TROCKENEM</b>                                                                                                                                                                  |        |        |
| <b>UMIDO   WET   HUMIDE   NASSEM</b>                                                                                                                                                                     |        |        |

- 01 Temperatura supporto  
Base material temperature  
Temperature material de base  
Grundmaterial-temperatur
- 02 Attesa per la messa in carico  
Curing time  
Temps avant l'application de charge  
Bauzeit



# **SCHEDA TECNICA** **TECHNICAL DATA SHEET** **FICHE TECHNIQUE** **TECHNISCHES DATENBLATT**

## **Gamma prodotti | Product's range | Gamme produits | Warenangebot**

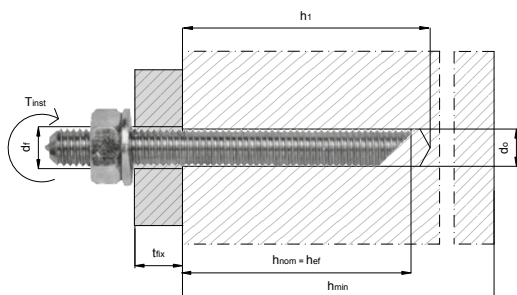
|                                                                                                                                                                            | CODICE > CODE<br>NUMBER                                                             | ARTICOLO > ITEM<br>TYPE > ARTIKEL | Ø FILETTATURA > THREAD Ø<br>Ø FILETTAGE > Ø GEWINDE | Ø FIALA > CAPSULE Ø<br>Ø CAPSULE > Ø PATRONE | Ø FORO > HOLE Ø<br>Ø TROU > BOHRLOCH Ø | LUNGHEZZA > LENGTH<br>LONGUEUR > LÄNGE |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------|----------------------------------------------|----------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                                                                                                            |    |                                   |                                                     | Ø [mm]                                       | d <sub>o</sub> [mm]                    | L [mm]                                 | Nr.                                                                                 |
|                                                                                           | 744031                                                                              | VZ-P 8 FIALA CHIMICA              | -                                                   | 9                                            | 10                                     | 85                                     | 10                                                                                  |
|                                                                                                                                                                            | 744032                                                                              | VZ-P 10 FIALA CHIMICA             | -                                                   | 11                                           | 12                                     | 90                                     | 10                                                                                  |
|                                                                                                                                                                            | 744033                                                                              | VZ-P 12 FIALA CHIMICA             | -                                                   | 13                                           | 14                                     | 95                                     | 10                                                                                  |
|                                                                                                                                                                            | 744034                                                                              | VZ-P 16 FIALA CHIMICA             | -                                                   | 17                                           | 18                                     | 95                                     | 10                                                                                  |
|                                                                                                                                                                            | 744035                                                                              | VZ-P 20 FIALA CHIMICA             | -                                                   | 17                                           | 22                                     | 145                                    | 10                                                                                  |
|                                                                                                                                                                            |    |                                   | d [mm]                                              | Ø [mm]                                       | d <sub>o</sub> [mm]                    | L [mm]                                 | Nr.                                                                                 |
| <br>    | 740008                                                                              | V-A 8-20/110                      | M 8                                                 | -                                            | 10                                     | 110                                    | 10                                                                                  |
|                                                                                                                                                                            | 740010                                                                              | V-A 10-30/130                     | M 10                                                | -                                            | 12                                     | 130                                    | 10                                                                                  |
|                                                                                                                                                                            | 740011                                                                              | V-A 12-10/135                     | M 12                                                | -                                            | 14                                     | 135                                    | 10                                                                                  |
|                                                                                                                                                                            | 740012                                                                              | V-A 12-35/160                     | M 12                                                | -                                            | 14                                     | 160                                    | 10                                                                                  |
|                                                                                                                                                                            | 740018                                                                              | V-A 12-95/220                     | M 12                                                | -                                            | 14                                     | 220                                    | 10                                                                                  |
|                                                                                                                                                                            | 740013                                                                              | V-A 12-125/250                    | M 12                                                | -                                            | 14                                     | 250                                    | 10                                                                                  |
|                                                                                                                                                                            | 740009                                                                              | V-A 12-175/300                    | M 12                                                | -                                            | 14                                     | 300                                    | 10                                                                                  |
|                                                                                                                                                                            | 740017                                                                              | V-A 16-20/165                     | M 16                                                | -                                            | 18                                     | 165                                    | 10                                                                                  |
|                                                                                                                                                                            | 740016                                                                              | V-A 16-45/190                     | M 16                                                | -                                            | 18                                     | 190                                    | 10                                                                                  |
|                                                                                                                                                                            | 740316                                                                              | V-A 16-105/250                    | M 16                                                | -                                            | 18                                     | 250                                    | 10                                                                                  |
|                                                                                                                                                                            | 740320                                                                              | V-A 16-155/300                    | M 16                                                | -                                            | 18                                     | 300                                    | 10                                                                                  |
|                                                                                                                                                                            | 740020                                                                              | V-A 20-60/260                     | M 20                                                | -                                            | 22                                     | 260                                    | 10                                                                                  |
|                                                                                                                                                                            | 740024                                                                              | V-A 24-55/300                     | M 24                                                | -                                            | 26                                     | 300                                    | 5                                                                                   |
|                                                                                                                                                                            |  |                                   | d [mm]                                              | Ø [mm]                                       | d <sub>o</sub> [mm]                    | L [mm]                                 | Nr.                                                                                 |
| <br> | 740108                                                                              | V-A 8-20/110 A4                   | M 8                                                 | -                                            | 10                                     | 110                                    | 10                                                                                  |
|                                                                                                                                                                            | 740110                                                                              | V-A 10-30/130 A4                  | M 10                                                | -                                            | 12                                     | 130                                    | 10                                                                                  |
|                                                                                                                                                                            | 740111                                                                              | V-A 12-10/135 A4                  | M 12                                                | -                                            | 14                                     | 135                                    | 10                                                                                  |
|                                                                                                                                                                            | 740112                                                                              | V-A 12-35/160 A4                  | M 12                                                | -                                            | 14                                     | 160                                    | 10                                                                                  |
|                                                                                                                                                                            | 740113                                                                              | V-A 12-85/210 A4                  | M 12                                                | -                                            | 14                                     | 210                                    | 10                                                                                  |
|                                                                                                                                                                            | 740115                                                                              | V-A 16-20/165 A4                  | M 16                                                | -                                            | 18                                     | 165                                    | 10                                                                                  |
|                                                                                                                                                                            | 740116                                                                              | V-A 16-45/190 A4                  | M 16                                                | -                                            | 18                                     | 190                                    | 10                                                                                  |
|                                                                                                                                                                            | 740120                                                                              | V-A 20-60/260 A4                  | M 20                                                | -                                            | 22                                     | 260                                    | 10                                                                                  |

(\*) 8.8 Su richiesta > On demand > Sur demande > Auf Wunsch lieferbar



**Dati installazione | Installation data | Données de installation | Installationsangaben**

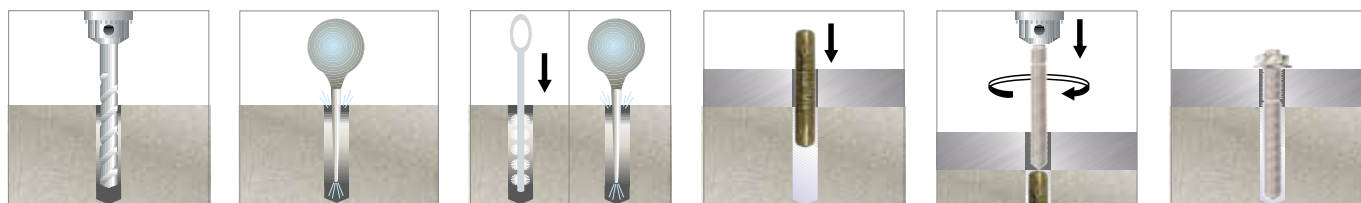
|          |                              |                                                                                                                                                     |
|----------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>D</b> | <b>d [mm]</b>                | Diametro barra > Rod diameter > Diamètre de la barre > Stangedurchmesser                                                                            |
| <b>N</b> | <b>h<sub>min</sub> [mm]</b>  | Spessore minimo del supporto > Minimum thickness of base material<br>Épaisseur Minimal du Matière Base > Mindestbauteildicke                        |
| <b>E</b> | <b>d<sub>o</sub> [mm]</b>    | Diametro foro > Hole diameter > Diamètre du trou > Bohrlochennendurchmesser                                                                         |
| <b>G</b> | <b>h<sub>1</sub> [mm]</b>    | Profondità del foro > Hole depth > Profondeur du trou > Bohrlochtiefe                                                                               |
| <b>E</b> | <b>h<sub>nom</sub> [mm]</b>  | Profondità di inserimento > Embedment depth<br>Profondeur d'enfocé > Setztiefe                                                                      |
| <b>L</b> | <b>h<sub>ef</sub> [mm]</b>   | Profondità effettiva ancoraggio > Effective anchorage depth<br>Profondeur efficace d'ancrage > Effektive Verankerungstiefe                          |
| <b>D</b> | <b>S<sub>cr</sub> [mm]</b>   | Interasse caratteristico > Characteristic spacing<br>Entraxe Caractéristique > Charakteristische Achsabstand                                        |
| <b>N</b> | <b>C<sub>cr</sub> [mm]</b>   | Distanza dal bordo caratteristica > Characteristic edge distance<br>Distance du bord caractéristique > Charakteristische Randabstand                |
| <b>E</b> | <b>S<sub>min</sub> [mm]</b>  | Interasse minimo > Minimum allowable spacing<br>Entraxe minimale > Minimaler Achsabstand                                                            |
| <b>G</b> | <b>C<sub>min</sub> [mm]</b>  | Distanza minima dal bordo > Minimum allowable edge distance<br>Distance du bord minimale > Minimaler Randabstand                                    |
| <b>E</b> | <b>d<sub>r</sub> [mm]</b>    | Diametro foro spessore fissabile > Diameter of clearance hole in the fixture<br>Diamètre du trou de épaisseur fixable > Durchgangsloch im Anbauteil |
| <b>L</b> | <b>S<sub>w</sub> [mm]</b>    | Chiave > Key > Clef > Schlüsselweite                                                                                                                |
| <b>L</b> | <b>T<sub>inst</sub> [Nm]</b> | Coppia di serraggio > Installation torque<br>Couple de serrage > Drehmoment Beim Verankern                                                          |



ETA-20/0533  
Option 1

M8 - M20

| MATERIALE<br>MATERIAL                                                                                                                                                                                                                                | DIAMETRO<br>BARRA<br>ROD<br>DIAMETER | TIPOLOGIA DI BARRA<br>TYPE OF ROD | SPESORE MINIMO<br>DEL SUPPORTO<br>MINIMUM<br>THICKNESS OF<br>BASE MATERIAL | DIAMETRO<br>FORO<br>HOLE<br>DIAMETER | PROFONDITÀ<br>DEL FORO<br>HOLE DEPTH | PROFONDITÀ DI<br>INSERIMENTO<br>EMBEDMENT<br>DEPTH | PROFONDITÀ<br>EFFETTIVA<br>ANCORAGGIO<br>EFFECTIVE<br>ANCHORAGE DEPTH | INTERASSE<br>CARATTERISTICO<br>CHARACTERISTIC<br>SPACING | DISTANZA DAL<br>BORDO<br>CARATTERISTICA<br>CHARACTERISTIC<br>EDGE DISTANCE | INTERASSE<br>MINIMO<br>ALLOWABLE<br>SPACING | DISTANZA MINIMA<br>DAL BORDO<br>MINIMUM<br>ALLOWABLE EDGE<br>DISTANCE | DIAMETRO FORO<br>SPESSORE FISSABILE<br>DIAMETER OF<br>CLEARANCE HOLE IN<br>THE FIXTURE | CHIAVE<br>KEY             | COPPIA DI<br>SERRAGGIO<br>INSTALLATION<br>TORQUE |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------|----------------------------------------------------------------------------|--------------------------------------|--------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------|
| <b>VZ-P</b>                                                                                                                                                                                                                                          | <b>d [mm]</b>                        |                                   | <b>h<sub>min</sub> [mm]</b>                                                | <b>d<sub>o</sub> [mm]</b>            | <b>h<sub>1</sub> [mm]</b>            | <b>h<sub>nom</sub> [mm]</b>                        | <b>h<sub>ef</sub> [mm]</b>                                            | <b>S<sub>cr</sub> [mm]</b>                               | <b>C<sub>cr</sub> [mm]</b>                                                 | <b>S<sub>min</sub> [mm]</b>                 | <b>C<sub>min</sub> [mm]</b>                                           | <b>d<sub>r</sub> [mm]</b>                                                              | <b>S<sub>w</sub> [mm]</b> | <b>T<sub>inst</sub> [Nm]</b>                     |
| <b>C20/25</b><br>Calcestruzzo<br>non fessurato<br>Non cracked<br>Concrete<br>  | M8                                   | ≥ 5.8 - A4-70                     | 110                                                                        | 10                                   | 80                                   | 80                                                 | 80                                                                    | 240                                                      | 120                                                                        | 40                                          | 40                                                                    | 9                                                                                      | 13                        | 10                                               |
|                                                                                                                                                                                                                                                      | M10                                  | ≥ 5.8 - A4-70                     | 120                                                                        | 12                                   | 90                                   | 90                                                 | 90                                                                    | 270                                                      | 135                                                                        | 50                                          | 45                                                                    | 12                                                                                     | 17                        | 20                                               |
|                                                                                                                                                                                                                                                      | M12                                  | ≥ 5.8 - A4-70                     | 140                                                                        | 14                                   | 110                                  | 110                                                | 110                                                                   | 330                                                      | 165                                                                        | 60                                          | 45                                                                    | 14                                                                                     | 19                        | 40                                               |
|                                                                                                                                                                                                                                                      | M16                                  | ≥ 5.8 - A4-70                     | 160                                                                        | 18                                   | 125                                  | 125                                                | 125                                                                   | 375                                                      | 187                                                                        | 75                                          | 50                                                                    | 18                                                                                     | 24                        | 80                                               |
|                                                                                                                                                                                                                                                      | M20                                  | ≥ 5.8 - A4-70                     | 220                                                                        | 22                                   | 170                                  | 170                                                | 170                                                                   | 510                                                      | 255                                                                        | 90                                          | 55                                                                    | 22                                                                                     | 30                        | 150                                              |

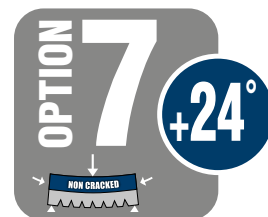




# **SCHEDA TECNICA** **TECHNICAL DATA SHEET** **FICHE TECHNIQUE** **TECHNISCHES DATENBLATT**

## **Dati carico | Load data | Données de charge | Lastdaten**

|               |                             |                                                                                                                                  |
|---------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>LEGEND</b> | <b>N<sub>rum</sub> [kN]</b> | Carico ultimo medio a trazione > Average ultimate tension load > Charge maximum moyenne de traction > Durchschnittliche Zuglast  |
|               | <b>V<sub>rum</sub> [kN]</b> | Carico ultimo medio a taglio > Average ultimate shear load > Charge maximum moyenne de cisaillement > Durchschnittliche Querlast |
|               | <b>N<sub>rec</sub> [kN]</b> | Carico ammissibile a trazione > Admissible tensile load > Charge admissible de traction > Zulässige Zuglast                      |
|               | <b>V<sub>rec</sub> [kN]</b> | Carico ammissibile a taglio > Admissible shear load > Charge admissible de cisaillement > Zulässige Querlast                     |



> Carichi validi per singolo ancorante senza influenza di interasse e distanza dal bordo e  $h \geq 2h_{ef}$   
 > Loads for single anchor with no influence of spacing and edge distance and with  $h \geq 2h_{ef}$   
 > Charges valables pour chaque ancrage sans influence d'interaxe et distance du bord et  $h \geq 2h_{ef}$   
 > Passende Ringe für den einzelnen Veranker, ohne Achsenabstandseinfluss und des Randabstands und  $h \geq 2h_{ef}$

> 1kN = 100 Kg  
 >  $\psi_{sus} = 1,0$

> Azione di taglio non diretta verso il bordo  
 > Shear directed away from the edge  
 > Action de cisaillement pas dirigée vers le bord  
 > Queraktion nicht an den Rand gerichtet

> Coefficiente di sicurezza globale incluso  
 > General safety factor included  
 > Coefficient de sécurité générale inclu  
 > Generelle Sicherheitskoeffizient inbegriffen

> Coefficiente lato carichi utilizzato = 1,4  
 > Load increasing safety coefficient used = 1,4  
 > Coefficient côté charge utilisé = 1,4  
 > Verwendeter Lasterhöhungssicherheitskoeffizient = 1,4



| MATERIALE<br>MATERIAL                                                                                                                                                                                                                                                                                                    | TIPOLOGIA DI BARRA<br>TYPE OF ROD | DIAMETRO BARRA<br>ROD DIAMETER | CARICO ULTIMO MEDIO A TRAZIONE<br>ULTIMATE TENSION LOAD | CARICO ULTIMO MEDIO A TAGLIO<br>ULTIMATE SHEAR LOAD | CARICO AMMISSIBILE A TRAZIONE<br>ADMISSIBLE TENSILE LOAD | CARICO AMMISSIBILE A TAGLIO<br>ADMISSIBLE SHEAR LOAD |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------|---------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|
| <b>VZ-P / V-A / V-A A4</b>                                                                                                                                                                                                                                                                                               |                                   | <b>d [mm]</b>                  | <b>N<sub>rum</sub> [kN]</b>                             | <b>V<sub>rum</sub> [kN]</b>                         | <b>N<sub>rec</sub> [kN]</b>                              | <b>V<sub>rec</sub> [kN]</b>                          |
| <b>C20/25</b><br><b>Calcestruzzo non fessurato</b><br><b>Non cracked Concrete</b><br><b>Beton non fissuré</b><br><b>Ungerissenem Beton</b><br><br> | $\geq 5.8$                        | M8                             | 18,3                                                    | 9,2                                                 | 8,0                                                      | 6,3                                                  |
|                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M10                            | 29,0                                                    | 14,5                                                | 13,8                                                     | 9,7                                                  |
|                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M12                            | 42,2                                                    | 21,1                                                | 20,0                                                     | 14,3                                                 |
|                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M16                            | 78,3                                                    | 39,3                                                | 27,3                                                     | 26,9                                                 |
|                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M20                            | 122,5                                                   | 61,3                                                | 43,3                                                     | 41,7                                                 |
|                                                                                                                                                                                                                                                                                                                          | A4-70                             | M8                             | 25,6                                                    | 12,8                                                | 8,0                                                      | 6,0                                                  |
|                                                                                                                                                                                                                                                                                                                          | A4-70                             | M10                            | 40,6                                                    | 20,3                                                | 14,6                                                     | 9,2                                                  |
|                                                                                                                                                                                                                                                                                                                          | A4-70                             | M12                            | 59,0                                                    | 29,5                                                | 21,4                                                     | 13,7                                                 |
|                                                                                                                                                                                                                                                                                                                          | A4-70                             | M16                            | 109,9                                                   | 55,0                                                | 27,3                                                     | 25,2                                                 |
|                                                                                                                                                                                                                                                                                                                          | A4-70                             | M20                            | 171,5                                                   | 85,8                                                | 43,3                                                     | 39,4                                                 |

**NOTA.** Dati tecnici, di installazione e di carico possono essere oggetto di revisione. Per una versione aggiornata consultare le schede tecniche sul sito [www.bossong.com](http://www.bossong.com) o contattare il nostro Ufficio Tecnico.

**WARNING.** Installation and loads technical data can be modified by us. For update technical data sheet see [www.bossong.com](http://www.bossong.com) or be in contact with our Technical Office.

**NOTE.** Données techniques, d'installation et de charge peuvent être objet de révision. Pour une version mise à jour, consulter les fiches techniques dans le site internet [www.bossong.com](http://www.bossong.com) ou contacter notre Bureau Technique.

**ANMERKUNG.** Technische Daten, Installationsangaben und Lastdaten können modifiziert werden. Für die aktualisierte Version sind die technischen Blätter auf der Webseite [www.bossong.com](http://www.bossong.com) nachzuschauen, oder unser Technisches Büro soll konsultiert werden.

# **SCHEDA TECNICA** **TECHNICAL DATA SHEET** **FICHE TECHNIQUE** **TECHNISCHES DATENBLATT**



## **Dati carico | Load data | Données de charge | Lastdaten**

|               |                             |                                                                                                                                  |
|---------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>LEGEND</b> | <b>N<sub>rum</sub> [kN]</b> | Carico ultimo medio a trazione > Average ultimate tension load > Charge maximum moyenne de traction > Durchschnittliche Zuglast  |
|               | <b>V<sub>rum</sub> [kN]</b> | Carico ultimo medio a taglio > Average ultimate shear load > Charge maximum moyenne de cisaillement > Durchschnittliche Querlast |
|               | <b>N<sub>rec</sub> [kN]</b> | Carico ammissibile a trazione > Admissible tensile load > Charge admissible de traction > Zulässige Zuglast                      |
|               | <b>V<sub>rec</sub> [kN]</b> | Carico ammissibile a taglio > Admissible shear load > Charge admissible de cisaillement > Zulässige Querlast                     |



> Carichi validi per singolo ancorante senza influenza di interasse e distanza dal bordo e  $h \geq 2h_{ef}$   
 > Loads for single anchor with no influence of spacing and edge distance and with  $h \geq 2h_{ef}$   
 > Charges valables pour chaque ancrage sans influence d'interaxe et distance du bord et  $h \geq 2h_{ef}$   
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> Azione di taglio non diretta verso il bordo  
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> Coefficiente di sicurezza globale incluso  
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> Coefficiente lato carichi utilizzato = 1,4  
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 > Verwendeter Lasterhöhungssicherheitskoeffizient = 1,4



| MATERIALE<br>MATERIAL                                                                                                                                                                                                                                                                                                                                                                    | TIPOLOGIA DI BARRA<br>TYPE OF ROD | DIAMETRO BARRA<br>ROD DIAMETER | CARICO ULTIMO MEDIO A TRAZIONE<br>ULTIMATE TENSION LOAD | CARICO ULTIMO MEDIO A TAGLIO<br>ULTIMATE SHEAR LOAD | CARICO AMMISSIBILE A TRAZIONE<br>ADMISSIBLE TENSILE LOAD | CARICO AMMISSIBILE A TAGLIO<br>ADMISSIBLE SHEAR LOAD |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------|---------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------|------------------------------------------------------|
| <b>VZ-P / V-A / V-A A4</b>                                                                                                                                                                                                                                                                                                                                                               |                                   | <b>d [mm]</b>                  | <b>N<sub>rum</sub> [kN]</b>                             | <b>V<sub>rum</sub> [kN]</b>                         | <b>N<sub>rec</sub> [kN]</b>                              | <b>V<sub>rec</sub> [kN]</b>                          |
| <b>C20/25</b><br><b>Calcestruzzo fessurato</b><br><b>Cracked Concrete</b><br><b>Beton fissuré</b><br><b>Gerissenem Beton</b>    | $\geq 5.8$                        | M8                             | 18,3                                                    | 9,2                                                 | 4,0                                                      | 6,3                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M10                            | 29,0                                                    | 14,5                                                | 7,3                                                      | 9,7                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M12                            | 42,2                                                    | 21,1                                                | 11,5                                                     | 14,3                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M16                            | 78,3                                                    | 39,3                                                | 18,7                                                     | 26,9                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                          | $\geq 5.8$                        | M20                            | 122,5                                                   | 61,3                                                | 30,3                                                     | 41,7                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                          | A4-70                             | M8                             | 25,6                                                    | 12,8                                                | 4,0                                                      | 6,0                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                          | A4-70                             | M10                            | 40,6                                                    | 20,3                                                | 7,3                                                      | 9,2                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                          | A4-70                             | M12                            | 59,0                                                    | 29,5                                                | 11,5                                                     | 13,7                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                          | A4-70                             | M16                            | 109,9                                                   | 55,0                                                | 18,7                                                     | 25,2                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                          | A4-70                             | M20                            | 171,5                                                   | 85,8                                                | 30,3                                                     | 39,4                                                 |